

# AMERICAN BEE JOURNAL

Vol. LXXV—No. 7

Hamilton, Illinois, July, 1935

Monthly, \$1.00 a Year

## Whisking Off the Honey

By G. H. Cale,  
Illinois.

**T**HIS is the long promised article on the use of carbolic acid to remove supers of honey. Let's start by saying that we have only used it here to remove extracting supers. Those who produce comb honey and who have tried the method, however, tell us that it is equally satisfactory for the removal of comb honey supers. L. R. Stewart of Indiana says the only objection he has found is that the bees do not do as good a job of cleaning up the loose honey in the sections as they do when bee escapes are used.

Carbolic acid has long been used to repel robber bees and it has been used in the past to remove honey. In looking back over the *British Bee Journals* of years ago, Mr. Pellett found references to it indicating that, for some reason or other, the acid at that time was not satisfactory. It apparently tainted the honey and did not drive the bees as successfully as it now does.

This is probably owing to the fact that chemical refining methods were not as well developed then as they are now. The acid which we get today is chemically pure and free from any deleterious products which would make it objectionable in the removal of honey. Be sure to buy the chemically pure acid and not the crude often handled at retail drug stores.

Our attention was drawn to the use of carbolic acid fifteen years ago, and we tried it, but did not like the material we used, so gave it up. About two or three years ago, Chas. Mraz, apiary inspector of Vermont, wrote about carbolic acid in "Gleanings in Bee Culture" in which he described its successful use. We subsequently tried it again here and have now abandoned bee escapes for the removal of extracted honey and have worked out a method of using carbolic acid which we find satisfactory, quick and efficient.

In giving this method, we do not intend to be original. Correspondence indicates that beekeepers have been using carbolic acid for this purpose in widely separated parts of the country for varying periods but have said nothing about it. There may be others doing just as we do but if so we do not know about it.

In the first place, it must be forcibly said that carbolic acid is a dangerous chemical. It can cause death when mistaken for water and taken internally, and so it should never be used except in well marked containers. Do not mix it up in anything which might be mistaken for a water container. Also a drop or more of pure carbolic acid on the flesh produces an immediate deep burn which fortunately can be partially neutral-



A five-pound tin of carbolic acid crystals.

ized by alcohol. Carry a bottle of denatured or grain alcohol with you so it may be applied to the arms, hands, face or wherever the acid may be accidentally spattered. Neutralize the spots immediately with alcohol and no bad results will occur.

Great care should be taken not to get it in the eye. Probably if alcohol were immediately dashed on the eye after the accident, the eye could be saved but remember at all times to handle this material with the greatest of caution and to make certain that your eyes are protected with glasses or goggles when using it.

In spite of this formidable caution, it still remains an ideal chemical to use in the removal of honey.

Carbolic acid may be used in diluted form when it is, of course, considerably less dangerous; but we have found that the pure undiluted chemical is more satisfactory. Carbolic acid may be bought in five-gallon tins, like the one in the picture, from wholesale or retail druggists and should not cost more than fifty cents a pound in this quantity. It is a crystal when so purchased and must be liquefied. Remove the cover from the tin, pour in a cupful of real hot water, immerse the tin itself in hot water until the crystals are entirely liquefied. They will remain liquid



Liquefy the crystals and pour into brown or blue bottle, using a five-cent funnel.

thereafter. The liquid may be poured into bottles or used from the tin.

Carbolic acid may also be purchased at a somewhat higher cost in small brown or blue bottles holding about a pound each.

The action of the acid depends on the evaporation and distribution of acid vapors through the supers. Apparently the effect is to irritate the bees and to cause them to move rapidly away from their location. Bees can be driven entirely outside the hive by strong carbolic acid fumes so that none is left on either the brood combs or extracting combs. Of course, this is not desirable but it does show how powerful an agent it is.

The rapidity with which the acid acts depends entirely on the weather. It may be affected by high winds, clouds or by daily differences in temperature. A quiet, hot day, in full sunshine, is the very best. Under these conditions, the acid works within a few minutes, entirely ridding the supers of bees. In cooler weather or when the sun is obscure, or on a windy day, the acid will not work as rapidly. When the later days of fall come and fall honey must be removed in a cool period, it is very unsatisfactory. Fortunately, the majority of honey removal comes during the most suitable weather.

Since carbolic acid is a repellent to insects, it may also be used to keep down robbing when loading trucks during a time when there is little available for the bees and they are inclined to rob. In fact, it is possible to load large capacity trucks with a full load of honey without troublesome robbing even when robbing is most active.

#### How to Use the Acid

The pictures show the acid boards we use and the titles under the pictures describe the construction. These boards are simple wooden frames made of seven-eighths lumber or thicker, the same dimensions as the top of your hive, so as to leave a good



Put a five-cent clothes sprinkler in the neck of the bottle and sprinkle the cloth frames. Better wrap some old cloth about the bottle to protect the hands.

space between the frames and the cloth. Any kind of cloth, burlap, quilting, or heavy muslin is tacked tightly over the tops of the frames. The cover of tin lays over the cloth and is painted black. The black tin absorbs the heat of the sun which passes down through the cloth and distributes the acid vapors through the supers.

The acid is poured out of the tin through a small five-cent funnel into a bottle wrapped in cloth so that no drip will touch the hand. Then a clothes sprinkler (also costing five cents) is inserted in the neck of the bottle. Shake the acid on the cloth of the acid board, using anywhere from five to ten boards at a time depending on the temperature and the rapidity with which the acid works. We usually use about seven or eight boards when conditions are just right. On exceptionally warm, sunny days, five boards may be enough.

After the acid is sprinkled around on the cloth at the edges, corners and centers, the covers are removed from the hive and the boards placed on top of the supers, putting on all of the boards in one operation.

After about five minutes (longer in



The acid frame, with tin top, painted black.

less satisfactory weather) the bees will be out of the supers. Then the honey may be removed and carried to the truck. The boards are dropped on the next supers underneath.

#### The Way We Do It

Two or three men can remove eighty to one hundred supers in about two hours with acid boards when conditions are just right.

We go about it this way. On arriving at the yard, the truck is backed into a favorable position so it may be loaded with the least labor. A large cloth is placed over the cab and down on to the floor of the truck, a cloth large enough to pull back over the entire load as fast as the supers are tiered up.

A board with spikes on the ground end is sloped from the back of the truck to the ground so that whoever loads the truck may walk up the board into the body of the truck and place the supers where desired. As fast as the supers are built up to full tier height and full truck width, the cloth is pulled back over them. A can of water with sufficient carbolic acid in it to sprinkle with a brush over the cloth, on the floor of the truck, and on the sides of the supers, is kept handy. A regular bee brush will do.

Applying this carbolized water frequently will keep all robbing down. If robbers get too bad in spite of this, use a spray gun with ordinary fly spray material and kill off the accumulation. It seldom gets bad enough for this. In fact robbing by this method never gets anywhere near serious.

When the big truck is in place, with the loading board and the cover cloth all arranged, we are ready to go. Of course the truck should have tight sides and a tight bottom so that no bees can get in from these places.

The acid boards are laid out behind the hives, sprinkled with acid, and placed on the supers. Usually by the time the last board is on, the super on the first hive is ready to be



Set the frame on the supers, covers off. This is a dummy picture. The hive still has an inner cover and no super. But it shows the frame can be put on as simply as a hive cover.

removed. Supers are taken off down the row in rotation. Each acid board is dropped on to the super below and the supers now free of bees are carried to the truck and covered.

It is surprising how rapidly this work goes and how quickly you can get back to the honey house with a full load. Under ideal conditions, three or four loads of honey may be brought from outyards to the central extracting plant in a day's time. Two loads is a good average day's work for two men with a dual wheeled truck which will hold four or five thousand pounds gross load.

We have found too that it pays dividends in the control of disease to examine every colony before the supers are put on and every colony sometime before the supers are taken off to make sure that no honey from diseased colonies finds its way in to the general lot of honey to be extracted. We think this is a very important item. Due care in this regard and strict segregation of both the honey and the bees which may be affected will go a long way towards cutting down the amount of disease in the extracted honey apiary.

It has often been asked "Does the acid taint the honey?" No. When supers are unloaded in the honey house, they may be stacked up in regular tiers and by the next day all traces of acid are gone. The odor may remain about the house and possibly on the wood of the supers, but there is no trace of it in the honey after it is extracted. Carbolic acid is a volatile chemical, passing off quickly through the air and several good authorities have assured us that there is no danger at all from the absorption of acid fumes by the honey or any injury to its flavor or odor. Be sure, however, to use chemically pure and not crude carbolic.

We have repeatedly tried an odor test with honey which has been extracted from supers removed with acid and honey from supers not removed with acid and find that no one is able to tell one kind from the other. So it seems perfectly safe to use, is very quick and the only caution necessary is to take reasonable care from personal injury when applying the acid to the cloth.

## Melbru Donates

The Melbru Company, of Detroit, Michigan, is a new organization which is promoting the manufacture and sale of honey in both intoxicating and non-intoxicating drinks. While members were assembled at the Valdosta conference, Prof. Kelty, president of American Honey Institute received the following telegram from Mr. Stapleton, president of the Melbru Company:

"Melbru Company, Detroit, Michigan, introducing honey in alcoholic and non-alcoholic beverages, desires

to express its sincere wishes to the beekeepers in the National Congress for most fruitful results in promoting the welfare of the industry. Being affiliated with your industry we desire to understand your problems and we pledge in accordance with the recent appeal of Prof. Wilson, Chairman of the Finance Committee one hundred dollars as a part of the plan

in financing American Honey Institute. Our Christmas greetings to one and all. Sincerely."

James M. Stapleton, Pres.,  
Melbru Company,  
Michigan.

We wish you every success, Mr. Stapleton and hope that Melbru will require car after car of honey in the years to come!

# Bookkeeping for Beekeepers

By Elmer Carroll,  
Michigan.

**DO YOU** keep books on your beekeeping business? There are many who do not, and I believe if more did, the industry as a whole would not be confronted with so much price-cutting and a subsequent demoralized honey market. Many will say that they cannot hire a bookkeeper and know so little about bookkeeping themselves that they prefer to keep every thing on memorandum pads or in their head. And yet they know this is not the proper method and would use books if they understood how to use them.

First obtain from a book store or a mail order house the following set of books: a cash record, a journal, and a ledger. The cash book is an account of all cash taken in and all cash spent, regardless of what the item is.

The left-hand page or column is always the debit column. In the cash book this represents any cash taken in or receipts. The right hand page or column is always the credit column and in the cash book this represents any money paid out, that is, for expenses, supplies, equipment, accounts, etc. The balance of these two columns should equal the cash on hand.

The purpose of the journal is to itemize daily transactions under their proper heads, such as, purchase journal, sales journal, expense account, equipment account, accounts receivable, accounts payable, and inventory. Head these accounts on separate pages.

The journal is ruled with the debit and credit columns next to each other at the right hand side of the page. Every item of cash from the cash book is credited or debited in one of the journal accounts. Thus, cash received on sales is credited to sales, cash received on an account is itemized under accounts receivable. Credit cash or cash paid out is, if spent for operating expenses, debited expense account, that spent for supplies, to purchase account.

The following outline may help:

Debit—Cash; cash received. Sales;

goods returned. Purchase; cost, transportation. Expense; operating cost. Equipment; same as purchase. Accounts Payable; cash payments. Accounts Receivable; goods sold.

Credit—Cash paid out. Goods sold. Goods returned. Adjustments. Same as purchase. Goods received. Cash payments.

The ledger is used to check the items totaled in the journal once each month. The ledger is ruled with the debit items on the left half of the page and the credit items on the right side of the same page. The monthly totals are added at the end of each year or periodically to determine profit or loss. Page numbers are used in both journal and ledger to signify corresponding number of account in other book. Thus L2 before an account in the journal means the corresponding account will be found on page two of the ledger, and in the ledger the same account in the journal may be signified as J3.

In addition to the accounts carried in the journal the ledger should carry a capital account and should be booked as follows, debit—all debts and withdrawals, credit inventory and investments.

Then there is the annual profit and loss statement that is debited with expense account, balance of all accounts that show loss; and credit gross profit of sales and balance of accounts that show gain. At the end of the year your business condition can be figured thus—

Debit — Expense. Accounts Payable.

Credit—Cash on Hand. Inventory. Investments. Accounts Receivable.

Inventory is a subject in itself in as much as one is apt to over-value the equipment. A fair percentage should be allowed on all items for depreciation from catalog price. Two inventories each year are really required, in the spring of the year and at the close of the season. In closing I only hope that I have been able to make all angles of this topic clear and that it will be of benefit to those who have desired such information.



# The Swarming Season in Manitoba

By A. V. Mitchener,  
Professor of Entomology, University of Manitoba,  
Winnipeg.



THE purpose of this brief paper is to record the duration and extent of the swarming season in Manitoba and to show its relationship to the honeyflow of the province. It is hoped that the information presented may assist in a more timely use of methods of swarm control.

During the years 1926 to 1933 a number of representative beekeepers in Manitoba were requested to note the dates when swarms were observed to emerge in their apiaries. During these eight years, 726 swarms were recorded by the Department of Entomology. The information obtained is presented as a silhouette in the accompanying figure. In addition, the line graph in the same figure shows the honeyflow from Manitoba during the years 1924 to 1930 as taken from a bulletin\* entitled "Package Bees." This line presents data obtained from 107 scale colonies each weighed daily with certain unavoidable lapses, from May 1 to September 30 each year during the period.

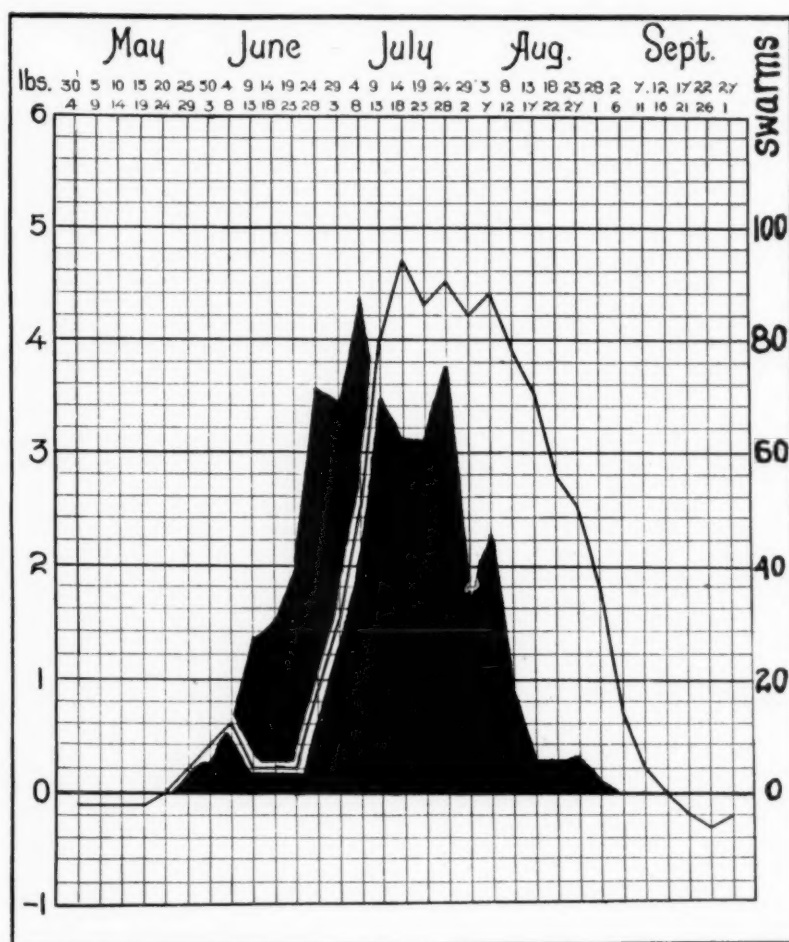
The silhouette on the accompanying figure indicates the beginning, extent and end of the swarming season as recorded for five day periods throughout the eight seasons. The exact number of swarms for any five day period may be read from the column at the right of the figure. The earliest recorded swarms occurred during the five day period, May 25 to May 29, while the latest swarms came off during the five day period, August 28 to September 1. The season of greatest swarming occurred from the beginning of the last week in June to the end of the fourth week in July, a period of five weeks.

The honeyflow may be read for five day periods during the season from the column at the left of the figure. For example, for the five day period June 4 to June 8 inclusive, the scale colonies showed an average gain of .6 pounds a day or 3 pounds a colony for the five day period. The

small flow of which the above five day period is the peak was obtained principally from dandelions supplemented by wild fruit bloom. This was followed by a dearth of bloom for about two weeks after which the surplus flow began and extended over a period of eighty days, being largely from white sweet clover.

Apparently the increase in the in-

tensity of the dandelion flow in early June stimulated swarming. The preparations made by the bees for swarming due to this stimulation resulted in an increasing number of swarms emerging as the days passed until the peak of the swarming season was reached during the period of July 4 to July 8. This closely parallels the line showing the growing in-



The silhouette indicates the swarming season in Manitoba. The number of swarms emerging for each five day period may be read at the right of the figure. The line graph indicates the honeyflow for the province and may be read at the left of the figure. A further explanation is given in the text of the article.

\*A. V. Mitchener, *Package Bees*, (Winnipeg: The Manitoba Department of Agriculture and Emigration, 1931), pp. 1-20.



tensity of the beginning of the honey-flow although it precedes it by some two weeks. The swarming season apparently corresponds to the period of the year when brood rearing is greatest although there is no published statistical information on the brood rearing season at this latitude in North America.

From our present knowledge of the swarming season, colonies in Manitoba should be examined weekly after May 24 at latest, to see that each queen has plenty of room in her hive for egg laying and that no queen cells are present in the combs. As soon as the cells along the tops of the center frames in the hive show whitened caps and when the spaces between the frames appear to be filled with bees as the beekeeper looks into the top of the hive, an extra super should be given to each needful colony. The accompanying figure also indicates that it is no longer necessary to examine colonies for queen cells after the end of July. If the last examination for queen cells is made approximately July 31 relatively few queen cells for swarming will be started after that date.

It is clearly understood that seasons and queens vary. We can do nothing about the weather, but beekeepers believe that much can be done about queens. Some colonies tend to swarm much more than others. We who buy package bees and queens are more concerned about the queens we get than we are about the quality of the two pounds of bees we buy. The two pounds of bees are necessary for feeding brood and keeping the young warm, but they take little part in gathering honey for us. The queen we buy is the mother of the field bees which gather our surplus honey crop. If the queen that we buy is inherently nomadic and her female offspring have a tendency to swarm, she is less valuable than if her young are willing to stay at home and work. Furthermore, if her young are resistant to disease she is more valuable still. Queen rearing has been and probably will continue to be a business best suited to the South. We who rear bees for honey production look to southern breeders for better queens. Among the wanted improvements are the two indicated. It is understood that there are two practical methods of mating queens under controlled conditions that are at least partially successful. The breeding of queens which will be mothers of disease resistant brood and of workers which do not tend to swarm is the progress honey producers most earnestly desire. Beekeepers will be keenly interested in all attempts by trained scientists in apiculture that may be made to produce better queens.

## American Honey Institute NEWS NOTES

### What Miracles Two Pails of Honey Can Perform!!!

Relative Values—do we consider them seriously?

Summer of 1934—we met Marcia Camp, Angelus - Campfire Marshmallow Company Home Service Director and explained the Institute program to her.

January 16, 1935—she wrote she was ready for some honey.

January 19, 1935—we contacted an **Institute Member** and arranged for a complimentary supply of honey for testing purposes.

January 21, 1935—the honey was delivered to Miss Camp.

January 31, 1935—received her thank you for the honey.

February, 1935—an exclusive release with picture showing how to make **Honey Scotch Sauce** (sent to approximately 800 leading newspapers throughout the country, expiration of exclusive date March 29).

March, 1935—Honey Marshmallow recipes over radio programs.

April, 1935—Honey Scotch Sauce Release to home economic workers.

June 1, 1935—the following report from Marcia Camp:

"I glanced through hurriedly our clippings scrap book and found the Honey Scotch Sauce featured in Hudson Dispatch (N. Y.); Albany News (N. Y.); Union City (N. J.); Springfield Register (Mass.); Dallas Dispatch (Tex.); Sacramento (Cal.); Evening World (Neb.); Harl. Star (Tex.); Cincinnati Times Star (Ohio); Herald (Wash., D. C.); Detroit Times (Mich); Chicago Tribune (Ill.); Omaha Herald (Neb.). This is just the beginning of the clippings on this recipe."

And now for the recipe for **Honey Scotch Sauce** as developed by Marcia Camp:

- ¼ cup butter
- 2 tablespoons cornstarch
- 1 ¼ cups strained honey
- ½ cup boiling water
- 8 marshmallows cut in quarters
- 1 tablespoon lemon juice
- ¼ teaspoon salt

Melt butter in saucepan, remove from heat, add cornstarch, stir until smooth, add honey and water. Return to flame and **simmer slowly** for five minutes. Add lemon juice, salt and marshmallow. Remove from flame as soon as marshmallows have melted.

### More New Members for the Institute!

The first person to send a new member since the membership campaign started was Mr. Hiatt of Lynchburg, W. Va.

Mr. J. Lake Macdonald secured five

new members at a recent county meeting (Marion, Ind.).

The largest county membership received this month was that from Vigo County Association, Delphos, Ohio, who sent \$25.00.

The quickest action taken by any state association was that of New Jersey; they received the Finance Committee's S.O.S. on the evening of their meeting. Messrs. Carr and Oettle presented the need to the forty-five persons attending and secured \$17.25. This is in addition to the regular pledge of \$75.00 made by the association at the first of the year.

Dan Steible of Cincinnati writes, "As manager of the Farm Department here, I come in contact with **many farmers**. Would like to be familiar with the activities of the Institute so I can recommend membership to farmers who have bees. With this in mind would like to have some of your literature and anything you can furnish."

We thank the individuals and organized groups for their fine support. We still have our heads above the water although it's getting pretty shallow.

### Cookery Contests

Recently, we received a report on the All-Bran Honey Cookie Contest sponsored by the G. B. Lewis Company, indicating that prize money went into nineteen states. We had the privilege of reading the reply of Mrs. Paul Daellenbach, who won the first prize amounting to \$50.00. We were so impressed by her comments on the response of women to contests, that we quote her letter in part:

"The interest created in the neighborhood by the prize check will eventually amount to more than the check. I am satisfied that the stores have made record sales on honey and Kellogg's All Bran during the last ten days. I feel that it is the grade of honey, more than my ability, that took first in this contest."

On June 22nd, a local Honey Cookery Contest is to be held by members of Vigo and Clay County Associations. The program is well organized, the rules, entry blanks and score cards are being properly distributed and excellent publicity is resulting. Mrs. Pogue, who heads the county auxiliary, reports that she has succeeded in getting the honey cookery contest in the regular culinary section of the Vigo County Fair. Splendid work!

And while we are on Contests, may we remind you that the time for (Please turn to page 339)



# EDITORIAL

AMERICAN  
BEE JOURNAL



## A Leader Is Gone

When last month's Journal announced the death of D. D. Stover it recorded the passing of an outstanding leader. Mr. Stover was probably the most extensive shipper of live bees in packages that the world has ever seen. An extensive queen breeder, honey producer and manufacturer of bee supplies he was active in every phase of the beekeeping industry. Beekeeping attracts but few men of sufficient executive ability to succeed with so many activities on so large a scale.

Mr. Stover was a whole hearted supporter of the American Honey Institute and gave generously to its funds. In addition he used every means at his command to interest others in its work. He early recognized the importance of such an agency in building public interest in the product of the apiary and gave the best he had to its service.

The industry can ill afford to lose such men. There will always be plenty who will make such bee supplies as are needed, or to rear queens or provide bees, but there are never enough men with the unselfish outlook which makes them give their time and their money to advance the interests of the industry as a whole. We need more real leaders and we greatly miss those who pass on.

## The Disease Experiment

Great interest has been manifested in the effort to find disease resistant bees. The cooperative experiment of the Iowa Agricultural Experiment Station and the American Bee Journal to learn how much difference there may be in the degree of resistance of different strains will of necessity move slowly. Much time is necessary to make a wide search for promising stock and bring it together at the Pellett Gardens at Atlantic, Iowa. It is proposed to expose all stock to the same amount of contagion and note results.

Reports of apparently resistant stock are coming to us from many widely separated localities, which lead to the hope that more resistance has been developed than has been apparent.

## Strange Discrimination

A Colorado beekeeper writes that although he does not own a store and does not buy and sell merchandise he has been required to pay the fee required by the store license law of that state although the law exempts farmers who sell their own products. He is at a loss to understand the discrimination against the honey producer. Lacking all the facts it is hard to see why a store license should be required of a beekeeper. Certainly honey is a farm product as milk or beans or potatoes and would be so construed by any court familiar with its production.

Judging from the limited information at hand, there must be some queer reasoning among Colorado officials, either by members of the legislature or in the Department of Finance and Taxation.

Here is something important for the Colorado Beekeepers' Association. In the absence of specific application in the law itself, it is very doubtful whether such a tax can be legally collected where farm products are exempted. It would seem that the beekeepers should refuse to pay the tax and that the association should bear the burden of contest of anyone who is put to the test.

For the individual beekeeper it is easier and cheaper to pay than to fight, but the industry cannot afford to accept such discrimination.

## New Interest in Bees

Prof. F. B. Paddock, of Iowa State College of Agriculture, reports increased interest in the subject of beekeeping on the part of the general public and a larger number of inquiries in response to his radio talks. There is a variation in interest from year to year but a revival of interest on the part of the general public generally goes along with an increase in prosperity for the honey producer.

## The Famous Beekeepers

The series of sketches of famous beekeepers now appearing in this magazine remind us of the debt we owe to those who have gone before. It is well that we stop to consider how different our day's work would be without the things that they have given us. The reason we remember them is because they have given us something to lighten our labor or have given us a better understanding of the things with which we work. The commercial queen breeders of the present day follow in detail the system of operations worked out by Doolittle. The few who do not, are followers of Henry Alley. But for the contribution of these two men queen rearing as we know it today would be impossible.

Hetherington taught us to support foundation with wire, Harbison first used the comb honey section, and Langstroth, greatest of all American beekeepers, gave us a movable frame. To each of a hundred men we owe something which has become important in making honey production the simple and pleasant occupation that it is today in contrast to the messy and uncertain enterprise of the past.

This magazine would like to see somewhere a museum of beekeeping which would bring together as far as possible the equipment used by these men and thus show the development of our craft. A series of life size portraits of the men who have made beekeeping a worth while occupation would add much of interest to such an institution.

The libraries relating to beekeeping which are fostered by some of our great universities are most valuable sources of material to the student in this field. It would seem that there should be sufficient interest on the part of the beekeepers of the nation to insure the success of a really representative museum devoted to the same object.

## Freak Seasons

Tourists often comment on the "very unusual weather" which they find when visiting new places. Whenever they encounter unpleasant weather they are likely to be told by the residents that it is quite out of the ordinary for that locality.

The seasons of 1934 and 1935, however, have been very unusual in fact over a wide expanse of country. In 1934 there was a long period of extremely high temperature accompanied by extreme drought and hot winds. Crops failed and vegetation died. The spring of 1935 has been quite the opposite with abnormally low temperatures. We are told that in only two springs since weather records have been kept in the Middle West, was the month of May so cold. Fires have been needed for comfort in most households well into June.

The question arises as to what is normal weather. Since no two seasons are alike in this region of great changes it would be hard to determine just what kind of weather is normal.

## The Dandelion

The dandelion is among the most useful plants to the beekeeper. Its bright yellow blossoms spread a feast for the bees at a most critical season of the year. It yields pollen in great abundance when it is most needed for spring brood rearing and under some conditions yields a bountiful supply of dark honey in addition.

Unmindful of the antagonism of the gardener who would leave no place for it, the dandelion spreads its seeds far and wide and each spring displays its marvelous yellow blossoms to the sun. Regardless of heat or drought which discourage less hardy plants, it continues to prosper.

To the beekeeper there is no more beautiful sight than a roadside carpeted with the dandelion's yellow gold. To him it means prosperity and indicates that his bees will be able to prepare for the later harvest which will pay his debts and taxes and provide food and clothing for his family. An abundant dandelion bloom in April and May provides food for the millions of baby bees which will be ready for the clover harvest in June and July.

Because of its abundance and persistence in the face of adverse conditions, it is despised and rejected by men who labor diligently to eradicate it from their lawns and gardens. At the same time they strive with equal ardor to establish less useful plants in their borders.

In spite of its unpopularity, the dandelion is still the beekeepers' friend.

## Vacations

Every person, regardless of age or financial situation, finds it to his advantage to have an occasional change. To get away from the usual round of duties and have an entire change of scenery and of activities does much to stimulate one and to increase his efficiency.

Unfortunately too many find the nature of their work to be such as to make it difficult to get away. The dairy farmer or the poultryman have duties which cannot be neglected for even a single day and someone must be left at home to do the regular chores.

The beekeeper is in an enviable position in this regard. Although his work may be strenuous for a portion of the year, his bees can safely be left for weeks at a time when his season is over. An ever increasing number of beekeepers are spending the winters in Florida and California. It seems safe to say that a larger percentage of beekeepers thus get away for a part of the year than is true of any other occupation of similar investment.

Since there is but little work which is directly profitable for the commercial honey producer who sells his crop in bulk, to be done during the winter months, he may even find it to his financial advantage to get away to a mild climate for the coldest weather.

## The Poison Problem

In our June issue appeared two articles relating to the use of poison in the control of pests. In one Professor Wood, of the Manitoba Agricultural College, assumed that we had reference to the grasshopper control in our editorials relating to the excessive use of poison.

Poison is now used so generally for the control of so many pests that we did not have in mind any one special pest or locality. Complaints of beekeepers who have suffered damage come from many different localities. Spraying of fruit trees for control of codling moth has been the most frequent cause of complaint, but the use of spray for potato bugs, the dusting of cotton and numerous others have resulted in the killing of bees. In only a few cases have we heard of injury to the bees in the grasshopper campaign.

Certainly this magazine has not intended to advocate abandoning the use of poison. There are too many cases where no other remedy seems available. We do contend, however, that the rights of the beekeeper should be respected and that due care should be used in the use of poison that no bees or other useful animal life be killed.

It is only necessary to read the article by W. C. Wixom which appears on the same page of the June number to learn how serious the poison problem has become for the beekeeper in many localities. Many beekeepers have been compelled to seek new locations and to suffer the losses incident to breaking up their homes and moving to new and strange places. Add to this the loss of the bees on which they have depended for livelihood and to them the spray problem is disastrous.

In the fruit districts losses which compel the beekeeper to remove his bees from the locality are likely to be reflected also in later reduction of returns from the orchards for lack of pollination.

It is important that a solution of the problem be found which will protect both crops and bees.

## Changing Locations

We have had occasion to comment on previous occasions on the changes which are reported to us by beekeepers whose pasture has failed. There has been a tendency in recent years for large scale honey producers to build expensive central extracting plants with elaborate equipment and room for storage for all supplies.

Such an arrangement is very convenient for the man who is sure of the permanence of his location. However, changes in agricultural practice have destroyed much of the bee pasture in many places. The beekeeper has little control over his bee ranges and too often the farmer over whose fields his bees pasture, may decide to grow another kind of crop.

Generally speaking, in the states east of the Mississippi River conditions are fairly stable and the beekeeper can settle down with assurance that he can carry on for a long time without worry about pasture. West of the Mississippi, however, there is no such stability and frequent changes of major crops are to be expected.

Several of our correspondents with large investments have thus found themselves in a position where they could no longer find support for the large apiaries on which they had depended. They could move the bees but a big honey house represented an investment on which they were compelled to suffer considerable loss. Some of our friends have thus been compelled to move two or three times in the past thirty years and they are beginning to wonder whether there is such a thing as a permanent beekeeping location.

## Effect of the Drought

Even where there has been normal rainfall so far this season the beekeepers in many localities are still feeling the effect of last summer's unprecedented dry weather. Over large areas the little white Dutch clover, on which so many beekeepers depend for surplus honey, has disappeared altogether. Alfalfa was also badly killed out in many places and will require a year or two to bring it back to its normal abundance. White clover will quickly recover with sufficient moisture but the drought removed all possibility of a crop from it this season. Trees and shrubs have suffered severely and very large numbers have died. Many other plants which have lived are so weakened that the bloom has been very light and the bees have fared but poorly as a result.

A drought of such severity as last summer's visitation is a major disaster, the effects of which will be felt for several years. The experience should arouse the nation to the importance of conservation of our water supplies in order to reduce the effect of future droughts as far as is humanly possible.

## Optimism

Already those beekeepers who are not realizing a crop this year equal to their expectations are looking forward to next season in the hope of better conditions. The beekeeper is always an optimist.



# Need of Better Methods for Controlling American Foulbrood

By C. E. Burnside,

Assistant Apiculturist, Bureau of Entomology and Plant Quarantine,  
U. S. Department of Agriculture.

SINCE the early days of beekeeping American foulbrood has annually cost beekeepers immense sums in losses of bees, combs, honey, and labor. With the development of modern beekeeping these losses have assumed greater proportions. European foulbrood can be controlled by keeping resistant Italian bees, and other diseases cause only insignificant losses, but American foulbrood is an extremely stubborn disease and when not controlled is capable of destroying entire apiaries. No safe method of treating this disease, except burning, has been discovered.

The persistent and destructive nature of American foulbrood is due to the resistant and constantly infectious nature of *Bacillus larvae*, the bacterium that causes it. Spores of *B. larvae* resist the most powerful disinfectants for days. In honey and in dead brood they remain alive for many years—just how long nobody knows, but it has been reported from Switzerland that spores in dead brood were found to be alive after forty to forty-five years(1).

Progress with the treatment of American foulbrood depends upon obtaining a better knowledge of this disease, its causative organism, and the way in which it spreads. From time to time research work has added to this knowledge, but it has come slowly. The time allotted to bee-disease work at the Federal Bee Culture Laboratory is largely required for diagnosis and other matters demanding immediate attention. Likewise, the urgent necessity of controlling American foulbrood has forced the various states to use the available money for inspection and treatment. Although large sums and much time have been expended for treating American foulbrood, the amount of disease has not been materially reduced, and may even be increasing. It is apparent, as has been the case with several human diseases, that development of better methods of treatment will require intensive and efficient research.

## Treatments Based on Saving Bees and Combs Not Dependable

Although a few of the methods tried that have been based on saving bees, combs, honey, and equipment have given partial success in this respect, they have proved ineffectual in reducing the amount of disease. Usually the more that is salvaged the greater is the chance of failure.

The shaking treatment, devised long before the cause of the disease was known, has until recently been widely practiced in this country and abroad. The basis of this treatment was the removal of contaminated material. Since bees carry spores of *B. larvae* on their mouth parts, legs and bodies, and in their honey stomachs, complete removal of spores is probably never accomplished by shaking. The number is greatly reduced, however, and the disease may be permanently cured when conditions are favorable and the work is carefully done by one who thoroughly understands the disease. Frequently, however, treated colonies remain healthy for one or more years and then disease develops again. Evidence has accumulated which leaves little doubt that cases of this sort are recurrences caused by spores carried over by the bees from the shaking treatment.

The fact that shaking succeeds at all is surprising, particularly in view of recent research(2). Sturtevant found that a minimum of about fifty million spores per liter in sugar syrup was required to produce infection. With higher concentrations of spores, infection occurred more promptly and spread more rapidly. Occasionally with the minimum number of spores the disease disappeared without treatment. It is improbable that no spores are carried over when colonies are shaken and, after all, fifty million spores is an extremely small proportion of the spores that are present in a badly infected colony. In other experiments Sturtevant(3)

found that American foulbrood can be carried by package bees when the interval between placing the bees in packages and using them for making colonies is seventy-two hours or less. He suggests that package bees should be kept for at least ninety-six hours before being used for making new colonies when there is a suspicion that they may have come from diseased apiaries. Some of the failures experienced with the shaking treatment may be due to the fact that bees were permitted to begin work in clean hives before ninety-six hours had elapsed.

Even with present information concerning the disease, practical experience dictates against the use of the shaking treatment by the average beekeeper. Many beekeepers who apparently thoroughly understand what is known about the shaking treatment have failed to clean up the disease. The experience of these beekeepers and observations made in the laboratory strongly indicate that some of the causes of failure are not yet understood, and, unless the job of shaking proves successful, there is great danger of spreading the disease.

The first attempts to disinfect combs against American foulbrood were made more than thirty years ago by exposing them to formaldehyde gas. The treatment appears to have been generally unsuccessful, although a few beekeepers claimed success with it. In 1928 Smith(4) reported the successful disinfection of combs of American foulbrood by prolonged exposure to formaldehyde gas. Apparently unaware that this method had been tried many years before, beekeepers were encouraged by Smith's report again to attempt to disinfect combs by fumigation. Less than 25 per cent of the combs, treated by beekeepers, that were tested for sterility at the Bee Culture Laboratory were found to be completely disinfected. The writer(5) found that

(1) O. Morgenthaler, "Bienenkrankheiten im Jahre 1925," *Schweizerische Bienenzeitung*, XLIV (1926), 176-180.

(2) A. P. Sturtevant, "Relation of Commercial Honey to the Spread of American Foulbrood," *Journal of Agricultural Research*, XLV (1932), 257-285.

(3) A. P. Sturtevant, "Package Bees and American Foulbrood," *American Bee Journal* LXXIII (1933), 259-261.

(4) Jay Smith, "A New Formalin Treatment for American Foulbrood," *American Bee Journal* LXVIII (1928), 169-170, 235, 236.

(5) C. E. Burnside, "Disinfection of American Foulbrood Combs by Fumigation with Formaldehyde," *Bee World*, XII (1931), 3-7, 16-19.

in large fumigating tanks, such as were used by beekeepers, scales absorbed formaldehyde very slowly and disinfection was frequently incomplete after treatment for as long as three months. In small tanks or in single sealed hive bodies, disinfection was found to proceed much more rapidly, owing to more rapid absorption of formaldehyde by scales of American foulbrood. It was also found necessary to wash gas-treated combs before giving them to the bees, to prevent heavy losses of bees from poisoning by the formaldehyde which was absorbed by the small quantities of honey that invariably remain in the combs after extracting. After three or four years of experimenting, the gas treatment for foulbrood combs was given up as unreliable.

The immersion of combs in 20 per cent formalin-water or formalin-alcohol solution is more frequently successful than any other known method of disinfecting combs of American foulbrood. The discovery of the treatment with formalin-alcohol by Hutzelman (6) not only gave hope that combs could be saved, but even encouraged some to believe that eradication of the disease on a nation-wide scale was possible. Both Sturtevant (7) and the writer (8) have shown that 20 per cent formalin-water solution is slightly more effective as a disinfectant for spores of *B. larvae* than 20 per cent formalin-alcohol solution. The Hutzelman solution, a patented article, is no longer advertised.

Several factors influence the degree of disinfection by the immersion treatment. The rate of disinfection increases as the temperature increases. At freezing temperature no noticeable disinfection is obtained after a week. The rate of disinfection also varies widely among different combs and different scales in the same comb. Usually two days' soaking at 68° F. or above gives complete disinfection of scales in open cells, but occasionally disinfection is still incomplete in some scales after they have been soaked at this temperature for three days. All scales soaked for four days at 68° F. tested sterile in the writer's experiments. Soaking for four days seems necessary to obtain complete disinfection, unless drying is retarded after treatment. When the drying of combs is retarded, disinfection continues for days, or even weeks, whereas if the combs are washed or dried rapidly after treatment, disinfection is abruptly stopped. The treatment of combs at temperatures below 68° F., or the washing and drying of them too

promptly after treatment, no doubt accounts for many cases of recurrence of disease in treated combs.

In spite of these improvements, the use of a disinfecting solution in connection with the shaking treatment is of doubtful value as a means of saving the bees from diseased colonies. Even when properly applied, the disinfectant may not thoroughly sterilize the combs, and if it does, in the actual shaking of the bees there is danger that the disease may be carried over. A good disinfecting solution, however, has a place in the bee yard for disinfecting super combs and all doubtful equipment, and at the present time formalin-water solution answers this need better than anything else. When American foulbrood has once existed in an apiary, there is no way of telling where contaminated honey is stored, and supers from diseased colonies may at times become lost in the general supply. Such uncertainty represents a real danger in the spread of disease but is one that can be prevented by judicial application of the immersion treatment. Disinfection of super combs when there is a chance that they may contain contaminated honey is recommended as a step in the treatment of American foulbrood (9).

Among other chemicals that have been tested for disinfecting combs of American foulbrood are chlorine (10), copper sulphate, iodine, and several commercial disinfectants. None of these chemicals, however, have been found to be reliable. Common lye and sodium hydroxide are powerful disinfectants, but they destroy wax and cannot be used for disinfecting combs. Hot lye water is very effective in removing wax and propolis from hives and in disinfecting frames and other equipment.

#### Burning Only Dependable Treatment Known

Burning is the only known reliable treatment for American foulbrood, and until better methods are perfected, this treatment should be the only one used. Especially with limited funds available for state inspection, unreliable treatment should never be attempted. Burning eliminates the danger of spread of disease by shaken bees or incompletely disinfected combs. The safest and most economical course for a beekeeper to pursue when American foulbrood appears in his apiary is to burn all diseased colonies promptly after they are discovered. The procedure to be followed in burning has been described in *Farmers' Bulletin*, 1713.

The actual burning of bees and equipment is but the first step in the

burning treatment for eradicating American foulbrood. It is highly important to inspect the remaining colonies in an apiary at least twice a year for five years or longer to prevent disease from breaking out again. There is always a chance that the disease may remain dormant in apiaries where American foulbrood has existed and that it may later become active and spread to many other colonies.

Another necessary step in this treatment is the disinfection of super combs and other doubtful equipment. Immersion of the super combs in formalin-water solution for forty-eight hours or longer is recommended as a precautionary measure in every clean-up program but not as a means of saving combs known to have come from diseased colonies. The formalin-water solution is prepared by mixing one part of commercial formalin, containing not less than 37 per cent of formaldehyde, with four parts of water. The combs should be completely uncapped and the honey extracted. The temperature of the solution during treatment should not be lower than 68° F. When the soaking is complete and the solution has been extracted, the combs should be placed while wet in hive bodies and covered tightly for a month or more to retard drying. By coating the inner surface of the hives with wax the combs can be kept wet longer. Washing or airing the combs a few days before they are needed will remove any odor of formaldehyde that might prevent the bees from accepting them.

Hive bodies, covers, and bottoms can be saved and used again without danger by thoroughly washing them inside and out with hot lye water or by dipping them in the hot lye water. Such equipment can also be sterilized by scorching the inner surface, but when this is done any honey on the outside of the hives should be washed off with water.

#### More Research Needed on Control of American Foulbrood

Our present methods of treating American foulbrood are unquestionably woefully inadequate. Shaking and treating brood combs frequently fail, so that the work has to be done over again year after year, and failures cause spread of disease. Burning of combs and bees, while the safest and in the end the most economical treatment, involves extensive losses. It was hoped, or even believed by many, that American foulbrood could be eradicated by burning, but inspectors have been given little help by beekeepers, and state funds have been insufficient for checking and re-checking all colonies over a long term of years, in order to burn every diseased colony. Until better control methods are discovered, American foulbrood will no doubt continue to

(6) J. C. Hutzelman, "Can the Combs be Saved?" *Gleanings in Bee Culture*, L (1922), 764-766.

(7) A. P. Sturtevant, "The Sterilization of American Foulbrood Combs," *U. S. Dept. of Agr. Circ.* 284, 1926, 28 pages.

(8) C. E. Burnside, "Variation in Results in Disinfecting Combs," *Gleanings in Bee Culture*, LIX (1932), 83-86.

(9) Jas. I. Hambleton, "The Treatment of American Foulbrood," *U. S. Dept. Agr. Farmers' Bull.* 1713, 1933, 14 pp.

(10) H. G. Ahrens and M. C. Tanquary, "Further Information on Chlorine Sterilization of Beekeeping Equipment," *American Bee Journal*, LXXII (1932), 12-14, 33-34.

be one of the most serious menaces with which beekeepers have to contend.

The perfecting of a satisfactory treatment for American foulbrood will require much intensive research. The task is likely to prove too complex, expensive, and time-consuming for beekeepers to undertake. The only recourse, then, seems to be for the states or the Federal Government to put trained men to work on the problem. When trained research workers can give their undivided attention to the work, without doubt a better way to control American foulbrood will be found.

Just what the nature of better control methods will be cannot be predicted. Perhaps the plan of finding and perpetuating a resistant strain of bees suggested by Pellett in a recent issue of the *American Bee Journal* (11) will solve the problem. The most common and successful means of controlling plant diseases is through finding and perpetuating resistant varieties. Although less has been done along this line in the case of animal diseases, it is well known that certain races or individuals are more resistant to certain diseases than are others. An outstanding example is the greater resistance to European foulbrood of Italian bees than of common black or hybrid bees. A race or strain of bees resistant to American foulbrood has not yet been found. However, this disease occasionally spreads slowly or disappears of its own accord when infection is slight, which may indicate greater resistance of the colonies involved. The extensive losses caused by American foulbrood would seem to justify a world-wide search for a strain of bees resistant to this disease.

The need for more information on bee diseases, particularly on American foulbrood, is emphasized by action recently taken in England wherein the beekeepers have asked that the experiment station at Rothamsted investigate the whole field of diseases of bees. So convinced are the beekeepers that many important problems connected with disease control are still far from being solved, that they are helping to finance the work through popular subscription.

#### **Beekeepers Must Assist Inspectors**

Beekeepers as a group have done little to assist in the control of American foulbrood. Until disease appeared in their own apiaries many beekeepers have been unfamiliar with either the symptoms or the treatment of this disease, and, after inspectors have burned their diseased colonies, beekeepers have often neglected to watch for a recurrence of the disease. Beekeepers are largely responsible for the spread of American foulbrood, and if it is not controlled the

loss is their loss. Most states maintain apiary inspection, but funds for this service are limited and it is not possible for inspectors to check and recheck annually every colony within their jurisdiction. In most outbreaks it is necessary for beekeepers to do most of the work of regularly checking remaining colonies in their own apiaries and burning colonies in which disease becomes active. It is unquestionably the duty of every beekeeper, whether he owns one or hundreds of colonies, to familiarize himself with American foulbrood and its treatment and assume responsibility, with occasional aid from inspectors, for the control of this disease in his own apiary. With the help of the beekeepers progress in reducing the large annual losses can be speeded up considerably. Free bulletins on American foulbrood and its treatment are available and first-hand information can be obtained from state apiary inspectors. Inspectors are always willing to give instruction regarding bee diseases and beekeepers should avail themselves of this opportunity. State apiary inspection is the backbone of disease control and under no circumstances can we afford to curtail or discontinue this service.

## **The Danger of Carbolic Acid**

By Dr. William D. Weis,  
Indiana.

In the discussions of the use of carbolic acid for the removal of honey I have seen no mention given to the dangers of handling it. No person should attempt to use it without having, near by, a liberal supply of an alcohol solution, the stronger the better. Wherever carbolic acid touches the skin it produces a "burn" which is not felt immediately since the acid itself acts as a local anesthetic.

The destruction process of the flesh continues as long as the acid remains in contact. A liberal application of the alcohol will arrest the burning by neutralizing the acid. Any alcohol solution may be used—even whisky or wine, in an emergency.

I have had to amputate fingers and toes for people because of carbolic acid burns. A tingling sensation, followed by dry gangrene was the first knowledge they had of severe burning.

My method of using the acid for bee chasing is as follows: Tack a thick piece of cloth snugly within the frame of a metal queen excluder. Apply the acid over the cloth with several turkey feathers fastened together like a brush. I then fasten a second excluder over the first one,

confining the cloth between. This prevents my coming directly in contact with the cloth or the acid on it and lessens the danger of burns.

I was taught that carbolic acid could be permanently mixed with water in but two strengths—5% and 95%. Any other mixture between these two will not remain a mixture unless glycerine is added. If a mixture with 50% water is made, the acid will soon settle to the bottom as a 95% solution. For this reason, be sure to mix up the solution thoroughly before making an application of it.

## **1001 Garden Questions**

The publishers announce a new edition of A. C. Hottes' popular book, *1001 Garden Questions Answered*. Mr. Hottes is widely known as former Professor of Floriculture of Ohio University and as associate editor of *Better Homes and Gardens*.

The book is the outgrowth of the author's long contact with the public in answering the numerous questions submitted to him. If you wish to know how to control damping off of seedlings, which plants can be set in wet spots, which lilies grow in shade, how to prune shrubs, what is the proper soil for onions, what insects infest house plants, how to make a garden pool or how to sterilize the soil, this book will tell you. It is an amazing collection of useful information on garden subjects. One has but little doubt that more than a thousand questions are answered in its pages after looking it through.

The book is divided into more than 25 chapters each covering a general subject such as annual flowers, perennial flowers, fruits, shrubs, lawns, hotbeds, etc.

The new edition is much improved and contains much new material. It contains 320 pages, is nicely bound and illustrated and sells for \$2 plus postage of 15 cents. A. T. DeLaMare Company of New York are the publishers and the book can be secured from them.

## **Advent of Karin Melissa**

This is the tuneful name of a ten-day honey baby, daughter of Eldon and Mary Marple, of Brule, Wisconsin. Mr. Marple is Educational Adviser in a CCC camp and is doing considerable to develop interest in bees as a hobby among the boys.

Mr. Marple says: "Karin Melissa narrowly escaped being named *Apis Mellifica* by the kind intervention of relatives and neighbors and a compromise was made on Melissa. She is a honey baby at ten days."

(11) F. C. Pellett, "Progress with Bee Diseases," *American Bee Journal*, LXXIV (1934), 351-352.



# The Packing Plant, An Opportunity In Beekeeping

By Walter H. Hull,  
Virginia.



ONE of the features of our notorious depression is that it has checked the normal flow of opportunity and has left young men more or less stranded. But opportunity, like gold, is where you find it; and like gold, it is seldom, nor for long, to be found in plain sight. Yet it is never lacking, never can be lacking as long as the affairs of men go on. In hard times one merely has to work harder, dig deeper to find it.

Among opportunities in the beekeeping field is that of establishing a honey packing plant. True, nearly every honey producer is a honey packer, but as a rule from necessity rather than choice. Nine beekeepers out of ten would prefer to sell their crops to a local packer, if one could be found. Incidentally an efficient honey packing plant in every community with a population of one hundred thousand would do more than any other one thing toward stabilizing the honey market, developing the potential demand, and opening outlets for an immense increase in honey production. The latest estimates of the Census Bureau give the present population of the country at about 140 million. Allowing a packing plant for each one hundred thousand people would give us fourteen hundred such plants.

Naturally, any such exact division could not be made in actual practice, but the proposition that one hundred thousand people will support a honey packing plant is based on definite experience. In selling honey during the last four years I have found that about one person in ten is what you might call a confirmed honey eater. Such a one will consume, if given the opportunity, about ten pounds of honey a year, on the average. In addition, about an equal number of people will buy some honey if proper-

ly approached, but much less in amount than the others, often not more than a pound or two during the whole year. These figures of course are not exact, but they do indicate definitely and truthfully the general condition of the retail honey market.

The average production of honey during the past five years has been, approximately, 175 million pounds a year. Exports have been little if any in excess of imports during that period, so that the total production indicates quite accurately the amount we have consumed. It figures out about one and one-fifth pounds a year for each person. That is, each one hundred thousand people used one hundred twenty thousand pounds of honey.

In order to handle this amount of business and allow for seasonal variations and normal growth as a result of fuller development of the territory, we would want a plant with maximum capacity of from 1200 to 2000 pounds a day. Such a plant, if efficiently designed and managed, could be operated largely by one man and still leave him time enough to take care of the selling and other business.

My experience in selling honey has been in a notoriously poor honey market. There are special reasons for believing that it is worse than the average locality; so I think we are safe in assuming that results obtained here could at least be equalled on other markets. My average gross profit on wholesale business was about three cents a pound. One cent of this went for overhead expense, leaving me a net income of two cents a pound for the work. My sales were much less than one hundred twenty thousand pounds a year, but that is adequately explained, I think, by the fact that I was primarily a honey producer—had merely the usual

makeshift bottling apparatus, paid more for containers, labels and whatever honey I had to sell at a higher price than the standard commercial brands sold for. Also, while my honey was good quality it was not always as clear as the other brands. These conditions, you will note, are similar to what the average producer has to contend with when he undertakes to sell his crop. It constitutes one of the chief reasons why he could more profitably sell to a local bottler—if he had one handy—and especially if that bottler could provide an outlet so that the producer could double his production without glutting the market.

This argument assumes that the local bottler could capture, and hold, the bulk of the local trade. I can see no good reason why a capable man should not be able to do that. It has not been done in the past for the reason just mentioned—that the bottler was nearly always a producer operating his packing business on a makeshift basis.

The small packing plant, properly equipped and operated, would have only a slight disadvantage in efficiency over the big packing plant such as is used for the few standard brands on the market. It would have in its favor: Lower selling costs, lower delivery costs, and a preponderance of good-will, which taken together would more than balance the scale in its favor.

The sale of one hundred twenty thousand pounds of honey, giving a net income of \$2400 a year, is by no means the top limit. It takes into account merely the present demand. The local packer could develop his small field far more intensively than the big packer with a nation-wide field to cover, which would give the

local plant a further advantage over its competitor.

The small, efficient local plant would have another important advantage in its favor. One of the obstacles that confronts the producer-packer continually is the chain store trade. The prevalent idea that chain stores buy their goods at fabulously low prices by taking a great quantity is largely myth. Naturally, if you deliver fifty thousand pounds of honey to their warehouse, you don't get as much per pound as you would from a retail storekeeper, because the chain store warehouse is nothing in the world but a wholesale house, conducted in the same manner as other wholesale houses. But if you make deliveries to their stores, the same as their warehouse would do, I have found that they are willing to pay a price that compares favorably with what independent stores pay. If they can depend upon you for a regular supply they prefer to have you make the deliveries and collect the money direct.

Now the producer-packer can't go after this business because he does not have enough honey, as a rule. But the local packer who was in the business to stay could handle the chain store trade, and would have an advantage over the big packer in that the chain store people are, for good business reasons, inclined to favor

local products whenever price and quality are equal.

It would be to the advantage of a local packing plant of this sort to buy the kind of honey produced nearest home in sufficient quantity to insure a dependable supply. In doing this, the packer would get the exact flavor that most of his customers were likely to prefer, save money on freight and automatically dispose of unbusinesslike competition from producers trying to market their honey through other channels.

This last point is most important to beekeepers in general. Strange as it may seem, the most disturbing factor in the honey market is the beekeeper himself, when he goes out to sell his crop. If the bulk of that business could be taken over by packers who understood and practiced good business methods, it would be a benefit to all concerned, and especially to the producers themselves, since a paying market would be developed for a much greater amount of honey.

It was found impractical to try to organize honey producers on selling agreements because there were too many of them—and, I suspect, because they were not primarily business men at all. But if it should come about that the bulk of this business is handled by a thousand or fifteen hundred packers, who are all good business men, effective organization would be a simple matter.

of the colonies. Better for me that year had I invested the package money in cane sugar and fed through the drought.

The season of 1934 had some comparisons with that of 1925, also some differences. The month of April was too cool for much flying. May started dry and hot. The bees had ample stores and built up about as they should have done. The dryness increased and continued, and by the end of the month there was such a dearth of nectar that brood rearing slowed down almost to the quitting point.

While the red and white clovers were not completely destroyed as in 1925, yet the dryness greatly diminished the honeyflow from these plants.

By June 7, super work among the strong colonies had progressed beyond expectations while weaker colonies were just about holding their own. For a while this was perplexing for there had been no rain and surplus should not be rolling in as it was. Then I learned that there had been recent heavy rains within two or three miles of my yard and I deducted that the strong colonies were flying into this more distant "wet" territory, and, having more available field workers, were able to make a showing beyond the ability of the weaker colonies. Again I was impressed with the advisability of having all strong colonies.

On June 8 an abundant rain fell just at the opportune time to make the sweet clover. After that the wet and dry weather alternated in fair proportion, and the honeyflow held up in a way I had never known before. On July 17, I found deep supers completely filled and capped. This was several days ahead of schedule. It will be a long time before I shall see this locality blessed with a honeyflow like that of 1934.

Of course if the dryness of the early part of these two seasons had prevailed throughout the entire summer, I doubt if even the sweet clover could have rooted deep enough to have produced any surplus. I have never experienced that sort of a season. But the outstanding fact is that during the early months of these two seasons, the usual sources of nectar for building up were greatly, and sometimes completely curtailed. But in spite of it, the honey came in.

While the two driest years I have known produced the most abundant crops of honey, the only complete failure I have experienced came with the wettest season I have known.

While there were some summer days in 1928, my record shows an abundance of cool, wet, windy weather with very scattered references to heat and dryness. A good honeyflow started early in July, but on July 10 I find this entry: "Nectar so thin and watery it runs from combs when they are handled."

## Wet or Dry—Which?

By Wilbur Sheron,  
Indiana.

THIS IS not a discourse on prohibition.

Out of my experience, I have found that an excessively dry season is more to be preferred to an excessively wet season. In checking up on my weekly notations, extending over a number of years, I have found some interesting data that tend to prove the usefulness of a beekeeper's diary, even if nothing else is proved.

There are three years in my experience which stand out as glaring exceptions of what we would consider seasons nicely balanced with just enough wet and just enough dry. These are the seasons of 1925, 1928 and 1934.

In 1925 the bees started off in early April with depleted stores. The month was dry and dusty. The first half of May was cool but dry. On the 16th a rain and hail storm broke the drought and brought the temperature down to 40 degrees. A freeze coming a week later put the mercury to 29 degrees.

On June 7 I find this entry: "Rain

last evening ended prolonged dry spell and excessive heat. Clover burned up. . . . Not fit for hay." This refers only to alsike and red clover. It was so completely dried up that it rattled in the wind like "the box of dead man's bones." It was fit neither for hay nor for pasture.

On the 13th a record rain of 2½ inches fell. It caught the sweet clover just as it was coming into bloom. During the rest of the season, wet and dry weather came in proper turn, and on August 6th I put on my first bee escape.

The early June clovers, which are considered a reliable and worthwhile source of supply in this locality, were completely dried up and no surplus was realized. However, sweet clover saved the day and there was a little better than average crop.

Early in the season, I purchased a number of queenless packages to strengthen weak colonies. They arrived in time to enjoy the idleness of the dry weather and so contribute little, if anything, to the upbuilding

On July 18 the entry reads: "Will not take any surplus." I not only failed to get a surplus that year, but I had to feed syrup for winter stores. A few of my neighbors got a very limited surplus, but it was thin, dark and strong. Most of them got what I did—nothing.

If the bees are kept in too much because of rains, and the rains are so frequent as to keep the nectar washed from the plants, nothing can be expected. If the weather is dry and hot and plant life is suffering for moisture; yet if the bees are able to fly, they seem to find, in my locality at least, a little something to keep things going, though I am often at a loss to know the source of their prosperity. I prefer the dry seasons.

## Two Kinds of Honey Center Golf Balls

The L. A. Young Company, of Detroit, whom our readers will remember as introducing a golf ball with a honey center, has just announced a new ball to be covered with the toughest casehardened cover on the market. It also will contain a honey center but will not replace the original "It's a Honey" ball. The original ball is for low handicapped players and the distance shooters, whereas the new one is for amateurs. This company is also introducing a new golf club under the name "International Honey Boy."

# Honey Krushed-Wheat Bread Going Strong



**H**ONEY Krushed-Wheat Bread is a new product developed by a formula belonging to the Bakers' Consulting Bureau whose production plant is at South Bend, Indiana. This bread calls for the use of honey, whole wheat and other ingredients to form a natural healthful food which, as the wrapper says, "relieves constipation in nature's own way."

The bread is made by individual bakers under a franchise granted by

the Bakers' Consulting Bureau which entitles the holder to the service of expert bakers and field workers over a period of time. The whole effort is unified by common advertising and bread wrapping and by medical recommendation to secure public confidence in a new bread product.

Correspondence with the Bakers' Consulting Bureau indicates that their efforts are receiving hearty acceptance by bakers in many parts of the United States. It is estimated that several hundred bakers have adopted this plan and it is hoped that beekeepers in the various localities where the bread is being made and distributed will cooperate with the bakers in furnishing a high class and standard grade of honey for this purpose. It is a wonderful market outlook and beekeepers should be on the watch to see that their local bakers hear of this plan and adopt it if possible. Then on their part, they should make every effort to supply the honey to fill this need.

Letters which we have received from bakers express great satisfaction with the reception which the product has already had on the market. One bakery chain with seventy-two retail bakeries throughout the Middle West says that Honey Krushed-Wheat Bread has made a decided increase in bread sales for them. This bakery concern broadcasts out of the Chicago area.

Bakers under this franchise produce anywhere from a few hundred loaves a day to thousands of loaves distributed over considerable territory. Every loaf of bread, of course, emphasizes the value of honey and as long as this product is popular on the market, it will go a long way to move a large volume of honey.

## St. Clair Association Exhibit



**M**EMBERS gather before the window exhibit sponsored and arranged by the St. Clair Association, in Illinois. Beekeepers in Madison

and St. Clair counties and from the St. Louis area take an active interest in the affairs of this live wire organization.





This picture shows the retarding effect of filtration on the subsequent granulation of honey.

So much interest has been shown in the filtering process developed under H. S. Paine and R. E. Lothrop that the demand for a small plant quickly became apparent. Here it is, one that any beekeeper, packer, or producer can set up for his own market needs.

# A Small Plant for Filtering Honey

By H. S. Paine and R. E. Lothrop,  
Carbohydrate Division, Bureau of Chemistry and Soils,  
U. S. Department of Agriculture.

SINCE publication of a recent article\* describing a rapid method of processing honey by means of filtration, considerable interest has been shown by honey producers, particularly for operation on a small scale. It was deemed advisable, therefore, to describe in greater detail the construction and operation of a small plant capable of processing from 800 to 1,000 pounds of honey a day. A plant of this size represents the smallest unit capable of being operated on an economical basis, although the capacity of this plant can be reduced to a smaller scale by utilizing only part of the filtering chambers of the press. Its capacity is ample for the output of several good sized apiaries, and it is suggested that a plant of this size might be operated on a cooperative basis by a number of producers who are interested in packing honey, where conditions are favorable to such a cooperative arrangement.

## Arrangement of Equipment\*\*

For a diagrammatic illustration of the arrangement of the various pieces of equipment used in this process,

\*R. E. Lothrop and H. S. Paine, "A New Method of Processing Honey," *American Bee Journal*, December, 1934, pp. 542-3.

\*\*A list of manufacturers and dealers who can supply the various pieces of equipment required will be furnished by the authors on request.

the reader is referred to the previous article dealing with this subject\*.

There are four essential steps involved in carrying out the process: (1) Preparation of the filter aid; (2) Admixture of filter aid and honey; (3) Heating the honey rapidly to processing temperature and (4) Filtration. The procedure for carrying out each of these steps, and the equipment required, will be fully described.

## Preparation of Filter Aid

In the previous article\* a brief description of the method of treating the filter aid with water and honey syrup before it is incorporated with the honey was given. Equipment suitable for this purpose, however, was not described. The size of equipment and the procedure described here are based on a capacity of from 800 to 1,000 pounds of honey (approximately 75 gallons) over a period of four and one-half to five hours (time of filtration cycle). It is assumed that the reader is familiar with the general procedure described in the previous article. It also should be pointed out that some variations in rates of filtration will occur, owing to natural variations in the composition and density of honey. The details of equipment and procedure are based on an average filtration rate of

2.5 to 3 gallons of honey per hour for each square foot of filtering surface. This value was determined by experimentation, and represents the average behavior of honey.

It was found that a high degree of clarity can be obtained for most honeys by use of  $\frac{1}{2}$  of 1 per cent of filter aid based on the weight of honey filtered. On this basis one thousand pounds of honey would require five pounds of filter aid. Furthermore,  $\frac{1}{2}$  per cent of filter aid represents the maximum proportion that should be used. In certain cases it might be found satisfactory to use a somewhat smaller proportion. Certain light honeys that contain relatively small amounts of suspended matter can be clarified satisfactorily by use of a smaller proportion ( $\frac{1}{4}$  per cent), which has the advantage of reducing the quantity of honey lost in the press cake, and results in faster filtration. In general, however, the clarity of the honey resulting from use of  $\frac{1}{4}$  per cent filter aid is not so good as when  $\frac{1}{2}$  per cent is used, but the increased clarity obtained by using  $\frac{1}{2}$  per cent may not in some cases justify the small additional costs involved.

The requisite quantity of diatomaceous filter aid (5 pounds) of the proper grade (see previous article) is mixed with about 3 gallons of

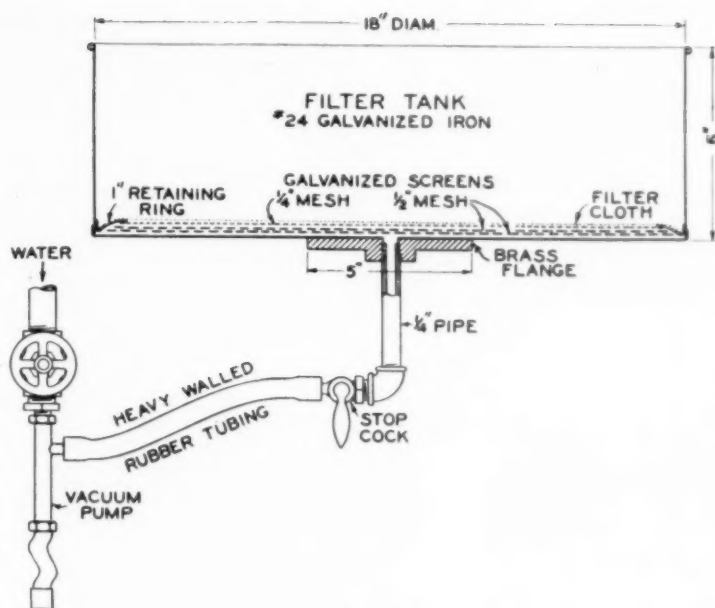


FIG. I  
VACUUM FILTER FOR PREPARING FILTER-AID

continued until the syrup is all drawn into the cake, where it replaces the water. In order to avoid drawing air into the cake the suction should be stopped (by closing stop cock) as soon as the layer of syrup disappears into the surface. The cake is then ready for mixing with the honey in the mixing tank. The purpose of adding the honey syrup is to replace the water present in the cake, so that slight dilution of the honey is avoided when the cake is mixed with the honey in the mixing tank.

If this operation is carried out carefully, there is no loss of honey syrup, since the quantity used is just sufficient to replace the water in the cake. After some experience, preparation of the cake requires only a short time. It is good practice to pour the honey syrup over the cake at about the same rate as it is drawn into the surface. This practice will insure a more even distribution of the syrup throughout the cake, thus resulting in more complete displacement of the water present. Five pounds of filter aid prepared in this manner will form a layer about two inches thick in the filter illustrated in figure I. This filter is of simple construction, and can be made at small cost by any tinsmith. The sides and bottom are made of galvanized iron soldered together. Three layers of galvanized screen are placed in the bottom of the filter and soldered at the edges so that they are held firmly in place. The screens serve to support the filter cloth, and allow a space between the cloth and bottom of the filter for passage of water into the outlet pipe. Figure II shows the flange which is soldered firmly to the sides and bottom of the filter over the outer edges of the screens, and serves to support the edge of the filter cloth. The small water pump can be purchased from dealers in scientific equipment at a cost of from \$1.50 to \$2.00.

#### Mixing the Filter Aid and Honey

For this operation a 90-gallon honey tank connected as shown in sketch (figure III) will serve both as a mixing and a feed tank. Any one of a number of types of mixing devices can be used for this purpose, but regardless of the type used, it must be designed to rotate slowly, and in operation it must be completely immersed beneath the surface of the honey. This is done to avoid incorporation of air. The simple paddle mixer illustrated is easily constructed, and relatively inexpensive, although not as efficient as some other types designed for such purposes. It should rotate at a speed of approximately 30 r. p. m. The electric motor for operating the filter press pump can also be used for operating the slow speed mixing device by means of a suitable speed reducing mechanism, since the two operations are not

water in a 5-gallon metal container (this container may be improvised from a 5-gallon honey can with the top removed) and brought to a boil and boiled vigorously for one or two minutes. The hot suspension is then poured into the round vacuum filter illustrated in figures I and II and the excess water withdrawn by means of the vacuum water pump. The suction is continued until the water layer on the surface just disappears, when the stop cock (figure I) is closed to stop the suction. The surface of the cake is then gently tapped with the fingers until a layer of water again separates

on the surface, when the suction is applied by opening the stop cock to remove the layer of water.

In order to avoid drawing air into the cake the vacuum should be shut off as soon as the water disappears from the surface. A piece of fine wire screen about five inches square is then placed centrally over the surface of the cake, and a honey syrup consisting of 15 pounds of honey and  $3\frac{3}{4}$  pounds of water (almost two quarts) is poured slowly over the surface. The screen serves to protect the surface while pouring the honey syrup over it. Suction is applied and



Fig. 2. Vacuum filter for preparing filter-aid.

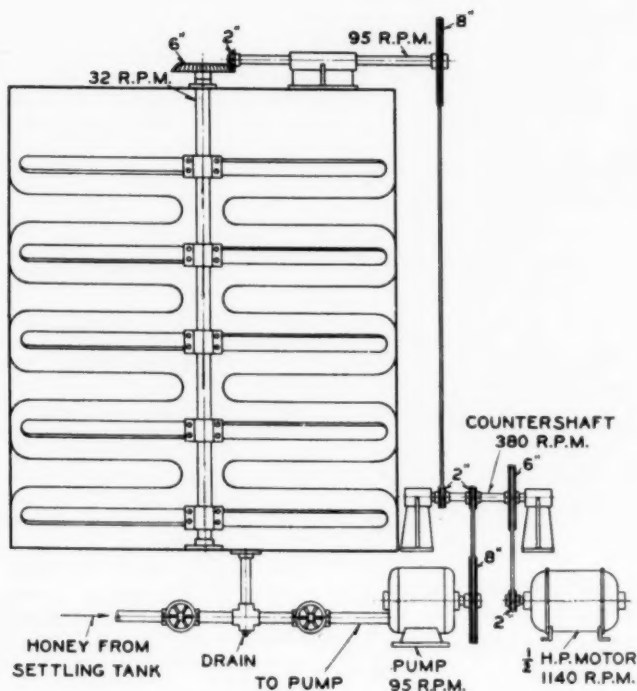


FIG. 3

MIXING APPARATUS

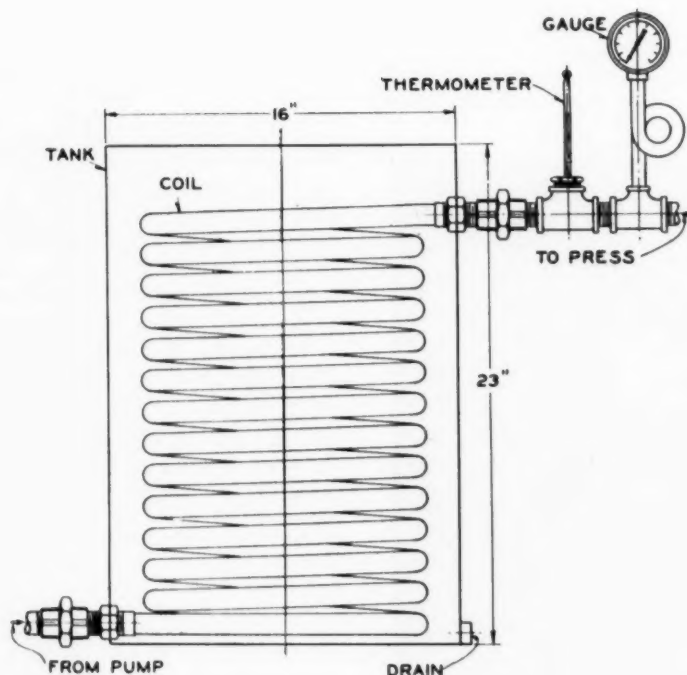


FIG. 4

COIL FOR HEATING HONEY

conducted simultaneously. Installation of a countershaft provided with pulleys of appropriate sizes (as shown in figure III) is perhaps the simplest method of carrying out this arrangement.

The tank should be filled with honey to a level above the top paddle, and the soft cake of prepared filter aid is then placed in the honey and intimately mixed with it by means of the slow speed mixing device. It is important that the filter aid be thoroughly and uniformly mixed with the honey before the filtration operation is started. Although this operation can be carried out with honey at room temperature, the mixing is greatly facilitated if the honey is warmed to about 100° F. A jacketed mixing tank may be used to advantage for this purpose.

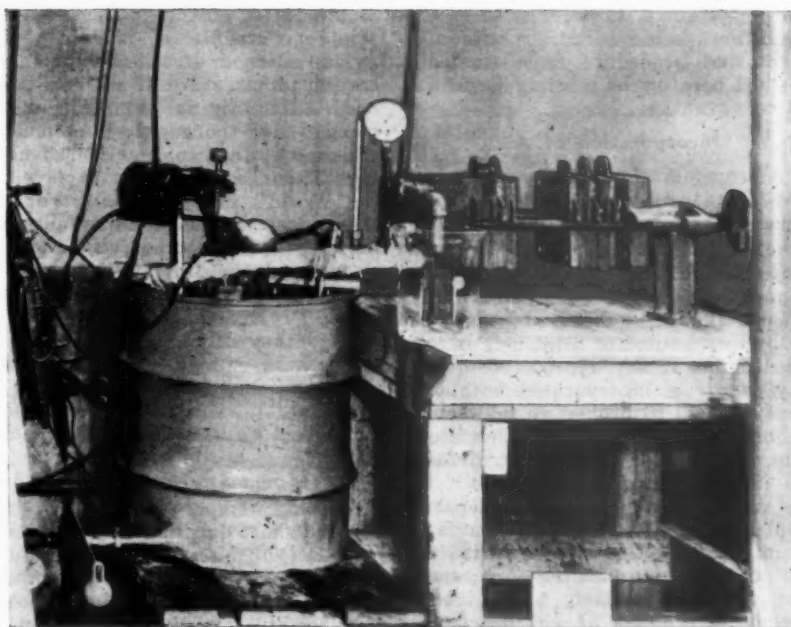
#### Heating the Honey

If the honey is being pumped from the mixing tank into the heater at room temperature (about 75° F.), about 40 feet of one inch (outside diameter) tubing made into a coil and placed in a container as illustrated in figure IV will be required. This length of coil is ample for heating the honey to full processing temperature (140° to 160° F.) while passing through the coil, provided the water in the tank surrounding the coil is maintained at a temperature approximately 20° F. higher. The correct temperature differential can be determined by trial. The water in the tank surrounding the coil can be heated most conveniently by live steam, provided it is available, since the steam serves both to heat the water and to keep it agitated so as to maintain a uniform water temperature.

If the water is heated by placing a heater under the tank, it would be advisable to keep the water sufficiently stirred to maintain a uniform temperature. A thermometer should be used in regulating the water temperature. There are available on the market a number of types of small water heaters that can be attached to the side of the water bath. If steam or other indirect means of heating the water is used, it might be advantageous to use a wooden container for the coil, since less loss of heat would occur through the sides due to radiation. If a metal container is used it is advisable to cover the sides with some type of insulating material, such as sheet asbestos, in order to reduce the heat loss. The container for the honey heating coil may be improvised from an oil drum or wooden keg.

In mounting the coil it is important to space the turns uniformly, so that no part of the coil slopes downward, but rather a gradual upward slope is maintained throughout its length. Metal straps may be used to insure uniformity in the coil mounting. Al-





These two pictures show the complete press and the method of maintaining its temperature. This picture shows the press uncovered.

though the coil can be made from annealed copper tubing, there is some indication that warm honey attacks copper slightly; hence, an aluminum coil is more suitable for this purpose. At the end of the filtration the water should be drained from the container by means of a plug near the bottom, so that honey adhering to the inner surface of the coil will not be overheated. Any honey remaining in the coil should be drained out at the end of the filtration.

#### Filtration

In filtrations involving use of a

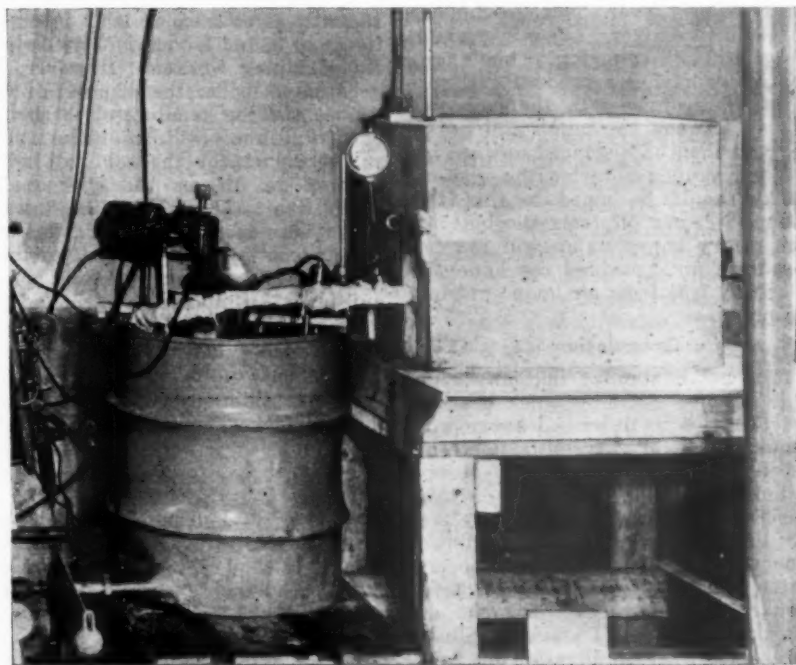
filter aid, such as the filtration of honey, if a constant pressure is used throughout the filtration cycle, the rate is quite rapid at first, but gradually slows down as the filtration proceeds, due to the steady increase in thickness of cake that collects on the cloths in the filter press, through which the honey must pass. It is better practice in filtrations of this kind to allow the pressure to control the rate of flow, so that the rate is approximately constant throughout the filtration cycle. Under these conditions the pressure is low at the be-

ginning, and is gradually increased as the filtration proceeds. It is good practice to adjust the rate of flow so that at the beginning the pressure is below 5 pounds to the square inch of filter surface and to carry out the first stage of the filtration at comparatively low pressures.

It has been determined experimentally that at 140° F. most light-colored honeys filter at an average rate of about three gallons an hour for each square foot of filtering surface under pressures that range from about 5 pounds to the square inch at the beginning to 50 to 55 pounds at the end of the filtration cycle of 4½ to 5 hours. The filtration rate, of course, is subject to some variation, depending on the type of honey filtered. If, on this basis, the pump displacement and speed are so chosen as to produce a steady flow of filtered honey somewhat below this value (say 2½ gallons per hour for each square foot of filtering surface), filtration at fairly low initial pressures will usually be assured. For a filter press of appropriate size (for instance, a 7-inch, 12-chamber aluminum press with 1-inch frames which contains 6 square feet of filtering surface), the requisite flow would be 15 gallons per hour or 75 gallons for a 5-hour period. Assuming the rotary pump used has a displacement of 0.0025 gallon per revolution, at a speed of 100 r.p.m. it would deliver one-fourth gallon per minute or 15 gallons per hour, which is the flow required for the press described above.

In this connection, it is well to stress again the importance of starting the filtration with low pressures. If the initial filtration pressure is high, it will cause a tight packing of the filter cake at the beginning, and this will greatly reduce the subsequent rate of flow of honey through the press. The working parts of the rotary filter press pump should be made of specially hardened steel in order that it will resist the abrasive action of the filter aid. Upon entering the filter from the heating coil, the honey must not be allowed to cool, since any cooling of the honey at this point greatly retards the speed of filtration. The press must, therefore, be warmer before the filtration is started, and its temperature must be maintained throughout the filtration. Specially constructed filter presses are made in which warm water is circulated through jacketed plates for the purpose of temperature control.

However, a much simpler arrangement for this purpose can be used, which consists of covering the press with a wooden box as shown in figure V. The air inside of the box surrounding the press is kept warm by means of a small heater. Four electric light bulbs, placed so that two are on each side of the press inside of the cover may be used satisfac-



Here the wooden box cover is in place. Three 100-Watt electric lights maintain the temperature inside the cover.

torily for this purpose. A thermometer should be used to check the temperature inside of the box. This temperature should be kept about the same as that of the honey as it enters the press. It is well to start heating the press some time before the filtration is started in order to insure that all parts of the press are brought to the desired temperature. It should be kept in mind that the honey is not heated in the press; the arrangement above merely provides a means of maintaining the temperature during filtration.

The cloths used to cover the plates of the filter press should be pre-shrunk and cut to fit the press. They may be purchased from manufacturers of filter press equipment. A light cloth should be used. At the end of the filtration the frames of the press will be almost completely filled with cake. The cake is easily removed by peeling from the cloths. After the cake is removed the cloths are ready to use again. A definite amount of honey will be retained in the cake. While this may be considered a loss, it is possible to recover at least a portion of this honey. More than one-half of the honey, for example, can be squeezed from the cake by means of a hydraulic press. It is not recommended that this method be used for recovery of honey from the filter cake, since the cost of a hydraulic press for this purpose would probably not be justified. If the accumulated filter cakes from several filtrations be intimately mixed with an equal weight of water in the mixing tank, a large portion of the honey in the cakes may be recovered in the form of a syrup. Other ways might possibly be found for utilizing the honey in the press cake.

The scheme for construction and operation of a small honey-filtration plant outlined above assumes that electricity for operating the honey pump motor, and water pressure for operating the water vacuum pump, are available. When these facilities are not available, certain changes will be necessary. For example, a stationary gasoline engine could be used to supply all the power required to operate the pump and mixer, and a small mechanical vacuum pump used in place of the water vacuum pump. In the case of those already engaged in producing and packing honey, it is assumed that a considerable part of the equipment required for the process would be available, or could be improvised. In all probability, it would be necessary to purchase the filter press, say at a cost of about \$95 f.o.b. factory (the 7-inch press described above), and a suitable rotary filter press pump at a cost of about \$35 (without motor or mountings). The cost of the vacuum filter for preparing the filter aid (figure I) will be about \$10, which includes cost of material, labor, and

the water pump. In order to suit local conditions, some variations in equipment and procedure from that described here might possibly be utilized to advantage.

#### **Incorporation of Air**

A consideration of primary importance in filtering honey is the necessity of avoiding the introduction of air into the honey at various steps of the process. Although it is found that small quantities of finely divided air can be removed from honey by this method of filtration, on the other hand, if any appreciable quantity of air is incorporated with the honey, it will be broken up into small bubbles in passing through the filter. The presence of this finely divided air imparts a cloudy appearance to the filtered honey, and upon separation it may produce a slight surface foam on the bottled honey. By taking the necessary precautions at each step where it is likely to be introduced the problem of air incorporation can be largely overcome.

Air will most likely be introduced in the following ways: (1) In preparation of the filter aid before it is incorporated with the honey. This is avoided by taking care not to draw air into the cake while removing excess water by means of the suction pump. (2) The presence of grossly suspended air in the honey before admixture of filter aid. This is prevented by allowing the honey to stand for some time in a settling tank, so that most of the air rises to the surface. The honey is then drawn off from beneath. (3) Air incorporated when mixing honey with filter aid. This is prevented by use of a slow-speed mixer, and by filling the mixing tank to a level above the moving parts of the mixer. (4) Air pockets trapped in coil or piping. This is prevented by having a gradual and uniform upward slope in the coil and piping between the pump and press. Air will then be displaced upward by the honey upon entering the system. Tanks should be piped so that the honey is drawn off from the bottom. The rotary honey pump will not incorporate air, provided the honey is relatively free from air upon entering the pump.

#### **Granulation**

It is not contended that any type of honey processed by quick heating and filtration as described above will remain free of crystallization indefinitely, since the number of observations that have been made in this respect on various types of honey are too limited to justify any definite conclusions. However, some observations relative to this point have been made and can be discussed at this time. Figure VI markedly illustrates the effect of filtration on subsequent granulation of samples of clover honey approximately ten

months after bottling. The processed samples were filtered in June, 1934, by the method described here, a filtration temperature of 140° F. being used. The original sample (not filtered) was thoroughly liquefied at the time by the usual method of heating. These samples were displayed at the World's Fair in Chicago during the summer of 1934, all samples being entirely liquid and free of visible crystals at the time they were displayed. When the samples were finally returned (about April 1, 1935), they were in the condition shown, the sample of original (not filtered) honey having granulated to a solid state, whereas the filtered honey showed no indications of granulation.

In view of the comparatively low processing temperature used (140° F.) and short duration of the heating period (15 minutes), these results tend to bear out the view that filtration treatment effectively removes small crystal nuclei, the presence of which in honey serves to start subsequent granulation. It would appear, therefore, that granulation of honey can be effectively controlled by means of a considerably less drastic heat treatment when accompanied by filtration than is required by usual methods of heat treatment.

## **Getting Rid of Those Pesky Laying Workers**

By Alfred H. Pering,  
Florida.

In the April, 1933, issue of "American Bee Journal" E. S. Miller, of Indiana, gives some reliable information and sound advice on how to get rid of laying workers. However, he does not consider the disposal of the drones and the handling of the brood combs. I am not introducing these subjects just for the sake of being allowed to discuss them. I really would like to know Mr. Miller's way. Down here in sunny Florida, queens can and do lay eggs every day of the year. They lay themselves out much quicker than in the North, and in spite of all the watching I can do to prevent it, a laying worker colony is sometimes found.

As Mr. Miller says, the best remedy for laying workers and also the best cure for moth, is uniting the afflicted colony with a strong colony of pure Italians.

At present, I dispose of the brood combs in this way: After everything is settled and the laying workers have ceased their "work" I introduce a young queen to that brood chamber. The introduction is easily made if you use a ventilated bee escape board in connection with a queen excluder just below your top brood chamber.

Place the excluder first below the brood chamber and leave the bee escape hole open. The old bees will pass below and become field bees. The young bees will accept the queen and when, in due time, she has begun to lay, you can remove the top brood chamber and you have a colony as before.

Here in the South, there is a continuous production of pollen throughout the year. Good strong active Italians will pollen bind their queen if you do not prevent it. The introduction of a queen to this top brood chamber results in the removal of much of this surplus pollen, as it is consumed by the bees in the rearing of brood. New pollen is not carried up by the field bees but is deposited below; and if the top chamber is left on the hive long enough, the surplus pollen will be consumed and the queen will not be confined in her laying. I have found it very convenient and profitable to rid myself of pollen-choked combs by placing them in a top brood chamber and giving them a good queen.

As the drones die when held above a queen excluder, it should be seen that the excluder does not become clogged.

## Statistics on Average Colony Production

The question of average production per colony in the United States is one of interest. I have before me a report of the United States Department of Agriculture, Bureau of Agricultural Economics, giving the estimated number of colonies, the total yield of honey by states for the years 1930, 1931, 1932 and 1933, and the estimated yield per colony in each state. These individual estimates were obtained from leading beemen in each of the several states with the exception of Maine and New Mexico. In these two states the 1930 census figures were used.

By adding together the average colony production for each of the four years and dividing by four, we have the following average annual colony production in pounds for each state, covering the period mentioned:

Alabama	16.25
Arizona	45.00
Arkansas	15.50
California	40.85
Colorado	30.00
Connecticut	30.50
Delaware	41.25
Florida	20.75
Georgia	32.50
Idaho	57.50
Illinois	26.25
Indiana	21.25
Iowa	56.25
Kansas	29.50
Kentucky	27.65
Louisiana	45.00

Maine	22.30
Maryland	33.25
Massachusetts	18.50
Michigan	51.25
Minnesota	70.00
Mississippi	20.25
Missouri	20.00
Montana	105.00
Nebraska	32.50
Nevada	45.00
New Hampshire	18.75
New Jersey	25.50
New Mexico	38.00
New York	38.75
North Carolina	28.50
North Dakota	97.37
Ohio	40.20
Oklahoma	22.50
Oregon	40.75
Pennsylvania	21.00
Rhode Island	24.75
South Carolina	30.00
South Dakota	64.50
Tennessee	13.50
Texas	27.25
Utah	47.75
Vermont	35.00
Virginia	30.00
Washington	43.50
West Virginia	15.75
Wisconsin	46.50
Wyoming	70.00

Dividing the sum of these averages (1773.87) by forty-eight, the number of states, gives the average annual production in the United States as 36.95 pounds.

Again, dividing the total average annual production in the United States (650,207,450) by the total average number of colonies, (18,680,295) we have an average per colony of 34.81 pounds. The discrepancy probably is due to the fact that decimals were not carried out in the first of these two modes of computing averages and therefore the latter is more nearly correct.

While the estimates furnished the Department of Agriculture may not be absolutely accurate, they are probably more nearly correct than any other thus far obtainable; and I believe, therefore, that we are safe in assuming that the average production in the United States for the four years, 1930 to 1933 inclusive, is approximately 35 pounds per colony.

It also is probable that these estimates concern chiefly the output of commercial apiaries and fail to include many if not most of the small yards where the yield often is negligible.

E. S. Miller,  
Indiana.

## Uncapping Brood Cells When Treating Combs

A question about Mr. Kruse's last article. He says nothing about uncapping brood cells when treating foulbrood combs. All other authorities advise uncapping everything.

How about it? W. H. Mays,  
Indiana.

Answer.—It is not absolutely necessary, but it will take a few days longer for the gas to penetrate the unsealed cells of brood. If you miss a cell of honey, however, your work will be in vain. You can unseal all the brood if you wish, making the work easier. Follow instructions given in my September article and you will be successful.

Chas. Kruse,  
Illinois.

## A New Sugar Cane Hybrid

Among all the sweets now known to modern civilized man, the first to be used was honey. It was the only sweet obtainable in those days and was used by rich and poor alike. Next came sugar and molasses, followed by maple syrup and maple sugar, sorghum, sugar beets and to say nothing of the rarer sugars used for medical purposes. Most of these sweets are used as spreads and come in more or less direct competition with honey.

From present indications, honey is to have another competitor in the form of a hardier sugar cane which is in reality a cross between sorghum and true sugar cane. Fertile hybrids have been developed between these plants and very promising specimens are now being tried out. These hybrids have been produced in far-off India and in our own United States Department of Agriculture. This cross produces a cane having the sugar content equal to the high production of the true tropical sugar cane and is produced from seed within a period of seven months. Also, it will stand a much cooler temperature.

So far the hybrids have been tried out in this country only under greenhouse conditions. It is possible some trial field plots will be undertaken this summer at different points in the South.

From tests made on a small scale this hybrid cane is expected to produce a high grade syrup of a much finer flavor than that produced by the sorghum which many people find distasteful. Also this syrup when boiled down sufficiently will produce a high grade of sugar said to be equal to that produced from the maple tree.

In the not too distant future, we beekeepers will have this crossbred competitor which promises to be a much stronger rival to honey than sorghum ever was. However, it seems probable that this plant will be grown only in the cotton belt of the South and that it will be planted on a small scale to produce the sweets for the farm family on its own farm.

Penn G. Snyder,  
Ohio.



# Queen Rearing

By Herman McConnell,  
Illinois.

WE have read with interest the articles appearing in various books and bee publications for the past number of years concerning queen rearing as applied to commercial practice and thought we might add our mite to help further the progress of this fascinating pursuit. We were particularly interested in Mr. J. W. Bain's article appearing in the June issue of *Gleanings* for 1934. We use a hive similar to Mr. Bain's but we do not agree with some of the recommendations he gives. We do not know how long he has used his system of rearing queens, but we desire to state that we have been using our present method since 1927. We claim no patents, prior rights or originality to our system but by constant experimenting and observations gained from hints and suggestions so generously given by others, we developed our present hive. We had thought of making our system public through the journals after the first two or three seasons' use, but we profess to be no writer. Also, several seemingly important ideas have bloomed and withered and it has seemed best to stand on firm ground before beginning to express ourselves. After using our hive eight seasons, we have been unable to make any further improvements.

We readily admit that the average beekeeper can rear good queens with his regular equipment, owing to the fact that he can select the most favorable time for his operations, and that the expense for goods specially made would not be justifiable. Using standard equipment for queen rearing throughout the season, through

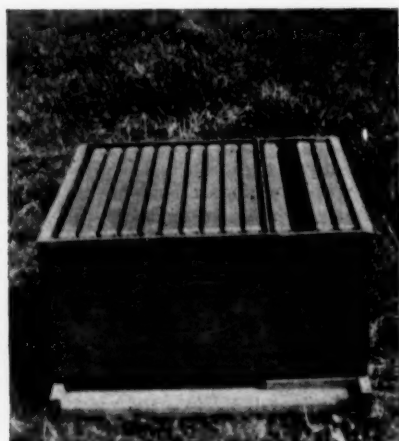
honeyflows and dearths, through weather, good, bad and indifferent, is a task that will test the mental and physical ability of any man. Practically every breeder will vouch for the above statement to the letter. The commercial queen breeder requires more or less special equipment.

As seen from the illustration, the only special equipment required for cell building is bottom board, hive body, queen excluding division board together with cover for side compartment. Our hives take fourteen frames Quinby (Jumbo) depth, with the queen excluding division board between the tenth and eleventh frames. This board slides in grooves at end of hive and in a groove in the bottom board to make it absolutely queen tight. The queen has the run of ten frames, while cells are built in the compartment at the side. The vacant space is for the frame containing cells. We desire to keep the queen in the one story, and with large combs she can maintain a populous colony—a requisite for any method of queen rearing. A queen excluder is placed above brood nest to make sure queen stays below. As season and honeyflow advance, regular ten-frame equipment can be added, thereby securing practically as much surplus as from colonies run exclusively for that purpose. One can readily see that the "old back" is certainly relieved when time comes to remove or to add cells.

We winter our cell builders in these hives; and as they have plenty of stores, room and a vigorous queen, they soon have bees pushed to all four corners of the hive. When cell

starting time comes, the brood nest is opened, the queen found and set outside on a frame of brood. The three frames that are in the compartment at the side are removed and replaced with two frames of well-filled brood and one that contains a small amount of brood and the rest honey. The latter frame is placed next to outside of hive. The remainder of brood together with queen is placed next to division board, always keeping the brood in as nearly spherical a form as possible. The brood chamber is completed by putting in the three frames that were taken from the compartment at the side and that particular colony is ready for cells in a couple of days. You will note that the above arrangement keeps the brood nest compact, and that cells are being built. As with any system, feeding is vitally necessary if no nectar is to be had in the fields. Feed is placed directly above cells where bees from all parts of the hive soon learn to come and get it.

Mr. Bain says: "It is advisable at all times to have one frame containing all drone comb if possible next to partition in side occupied by the queen." He does not state his reason, but we surmise his object is to keep the queen as far from cells as possible. Here is where we believe he is not realizing the full benefits from his hive, especially if using it throughout the season. We desire to have all our comb in these cell builders worker comb if we can get it. It is a fact that the queen will keep the comb next to division board as full of brood as any, since brood and bees are on the other side, and that



Hive with division board excluder in place. Vacant space is where frame containing cells is placed.



Hive as described in article showing construction of queen excluding division board.



No need to lift a lot of supers to add or remove cells. Note how feed is given directly above cells.

she has no knowledge whatsoever of the cells beyond. At least she makes no manifestations. Now many persons will ask: "Why don't they swarm when the first cells are sealed since they are in the brood nest as under natural conditions? We frankly admit we do not know; but in all the past eight years we have never had a cell builder swarm unless there were cells thrown up in the brood nest proper. We thought perhaps after we had constructed a few of our hives that the swarming would result, but we were working so desperately for something better, that we were willing to try almost anything once. No doubt some persons will be a little hasty with their criticisms and contend that these plans will work to best advantage when these particular colonies are headed with an old or failing queen. They are wrong. The younger and the more vigorous the queen, the better the results. We usually requeen our cell builders at least twice each season.

You will find that cells are built in the brood nest just as bees build them naturally. Cells are as good as any produced under natural conditions. All heavy lifting is done away with when putting in or removing cells. Colonies will store practically as much surplus as colonies run for that purpose. You are not compelled to extract every few days during honeyflow as when double brood chambers are used. Honey from such brood combs which contains considerable pollen does not make a first class table article. You can use regular honey producing equipment. At end of season, colonies will be in good condition to winter successfully.

Now this little article is not intended to criticize Mr. Bain's hive, for the principle is great and entirely in line with the way bees rear cells naturally, nor is it a request for anyone to adopt our style of hive in any sense. It is given only that those who are looking for something better may find therein ideas and suggestions that we hope will help them.

## To Exclude Mice

My method of making entrances to exclude mice is to make them the same as regular entrance pieces only saw the notch about one-quarter inch wide and slip a piece in with the notch side up.

This will prevent any possibility of the entrance becoming clogged up with dead bees. The pieces are made from hard wood, hard pine or oak, which prevent mice from gnawing through and made to fit tightly by slightly beveling the piece on the top edge to make the inside of the edge a little lower than the outside. It can be tightened so there is no possibility of it being pushed in by the mice.

Moody Brenneman,  
Indiana.

# Experimental Apiary



This is the experimental apiary operated jointly by the Iowa Agricultural Experiment Station and the

American Bee Journal. It is located at the Pellett Gardens, Atlantic, Iowa.

## Show Honey to Sell It



That mass display and plenty of it will sell honey has been proved by the Down Town Food Palace, of Little Rock, Arkansas, managed and run by Fred Armstrong.

The illustration shows the honey display made by Mr. Armstrong for his honey sale. The one hundred cases of honey he bought from T. W. Burleson & Son, Texas Honey Packers, were disposed of in a few weeks. All

size packages were used from small glass jars to large tin pails.

What the Food Palace accomplished in selling one hundred cases of honey many persons would have said was not possible in a town the size of Little Rock. They would probably have been right except for the aggressive merchandising system employed by Mr. Armstrong. His mass display let folks know that honey was there for them.

# A Discussion of the Steffen Suggestion

In the April issue of "American Bee Journal" Dr. Mart R. Steffen, of Wisconsin, discusses the possibility of the control of disease through the sterilization of honey. Many of our readers have replied to this suggestion. Dr. Steffen is well informed and we are glad to give this discussion which resulted from correspondence between Dr. Steffen and Leo Bradford, of Missouri.

**Mr. Bradford.**—In your first strong statement, Dr. Steffen, you say: "Foulbrood will never be eradicated until the beekeepers make up their minds that they want it eradicated." That probably is true. You refer to an article four years ago in the "American Bee Journal" and state that "eradication of disease in bees must differ from similar efforts in animals because the flight of bees is not within our control."

Here I will call attention to the fact that even though "we do control the movements of cattle and swine" we find it necessary to continue vaccination of calves for blackleg and swine for cholera. It is noticeable too that for years the so-called "men of science" have been trying to eradicate many human diseases but are far from complete success. We still have with us measles, small pox, typhoid, tuberculosis, cancer and many other maladies of long standing, notwithstanding the fact that because of the relatively greater value of human life, the efforts along this line have been more intensive than have ever been applied to the eradication of American foulbrood. This foulbrood germ is more virulent than the germs of any of these human diseases and if I am not misinformed, it is comparable only with the anthrax germ.

**Dr. Steffen.**—Of all the diseases you mention, only tuberculosis has been the subject of eradication attempts, and with considerable success. At the present time we have eighteen states classified as free from Bovine tuberculosis.

While I grant the value of human life is greater, I do not grant that efforts to eradicate human disease are more intensive, for the reason that it is impossible to resort in them to the intensive measures adopted by veterinarians in animal disease eradication, such as ruthless slaughter and other measures against which human beings would rebel.

There is no relation between the anthrax bacillus and the germ which causes foulbrood; anthrax affects nearly all species, including human beings. So far as we know bacillus larvae is specific for bee larvae only, and in that lies one great hope for

its eradication. There is some very definite reason, some exact histological, physiological, pathological or possibly biochemical reason why the latter is so; and when we discover this, if we ever do, we shall have the solution to the entire problem.

**Mr. Bradford.**—Do not misunderstand me. I am as much interested in holding in check disease among bees as anyone can be but I do not believe we will ever eradicate it so long as we keep bees, any more than hog cholera, and blackleg have been eradicated. We can control them; also, we can control bee disease.

**Dr. Steffen.**—In 1905, thirty years ago, we began the eradication of Texas fever ticks in the South. I was among some of the first veterinarians in the quarantine division to be engaged in this work along the Mexican border, as well as in Texas, New Mexico, Arizona and Mississippi. The quarantine line at that time practically coincided with the Mason-Dixon Line.

The old timers said just what you now say about foulbrood. They not only laughed at us but some went so far as to make it necessary to use strong-arm methods to get the work done. As late as 1913, it was not very unusual for some of the old-timers to dynamite our dipping vats, and for weeks at a time the veterinarians working on this assignment, moved only in the company of deputy sheriffs.

Today only a few counties remain infected in three states — Florida, Texas and Louisiana; and these will be cleaned up in a very short time now.

**Mr. Bradford.**—Consider your second strong statement: "No campaign of eradication will succeed which does not include the sterilization of all honey marketed." You will agree that if the disease spores could be killed by any reasonable method, the disease would be easier to combat. But since the honey containing spores must be boiled thirty minutes in a covered vessel, and diluted with 50 per cent water, it would not make a desirable dish for the consumer and it would not make good advertising.

You also know that an isolated spore must have the equivalent of

100° C. for ten minutes to kill it. When a 20 per cent solution of formaldehyde will not kill the spores in thirty-six hours, and a one-thousandth solution of corrosive sublimate will not kill it in thirty days, and likewise a 5 per cent solution of carbolic acid, I do not know just how we are to go about this sterilization.

Whenever the men of science develop a way of killing spores with a material which can be eaten or handled with the bare hands, and will not decompose all the equipment with which it comes in contact, we will not have to sterilize the honey, but will be able to kill the disease otherwise. Until then, I shall still remain true to the saying of our state, "You will have to show me."

**Dr. Steffen.**—You seem to be under the impression that to kill a micro-organism we must always resort to strong or corrosive chemical agents. You also seem to have the idea that the spore form of the germ and the active form are the same.

As far back as 1877, Blunt and Bownes investigated the bactericidal powers of the radiant energy of light rays and in 1903, Bernard and Morgan found the most active bacteriostatic rays were those between thirty-two hundred and twenty-two hundred Angstrom units in the near and middle ultra-violet. Since that time much water has run under the bridges.

In regard to chemicals, the dye industry has developed a by-product having ten times the germ killing power of carbolic acid which can be rubbed on your skin or put in your mouth with no more harmful effect than so much honey. Many dyes in themselves have been found to be very powerful germ killers.

The strength or corrosiveness of a chemical agent will, in some instances, prevent its germ-killing power; straight alcohol, as just one example, is almost inert as a germ killer. But diluted with water in correct proportions, it has great value for this purpose.

The spore form of micro-organisms is a protective stage which they assume under conditions unfavorable to their activity. As long as they are in the spore form, they are not active. You could have a hive full of such spores without ever seeing a case of foulbrood as long as conditions causing the spore formation remained the same.

I am not recommending any method of sterilization. Men specializing along this line will settle that question when we get to it. I do not think that from what little I know about it, that they would consider it a hard problem. Personally, knowing beekeepers as I do, I think it will be some time before we get to that point. Much education will have to be carried out before any American foulbrood eradication campaign be-



comes a reality. But the time will come and when it comes, the disease will be cleaned up. How fast it will be cleaned up depends not at all upon the disease but upon the organization of the campaign.

## Feminine Beauty and Honey

By C. M. Littlejohn,  
Washington.

**H**ONEY and plastic packs are strikingly featured by one of the distinctive beauty salons of the Pacific Northwest, for the allure of fairer, more charming feminine beauty.

For erasing that wilted and worried look, for rejuvenating and freshening the skin or restoring that lost glow of youth, honey may be at the base of the best sort of facial or stimulating complexion treatment. Its use is decidedly apart from some of those perfectly dreadful cosmetics and artificial concoctions that utterly ruin the tender skin.

So long as Venus is their goddess women do foolish things, such as purchasing millions of dollars of lures and "come-hither" preparations. They look for Magic promised by those who unscrupulously prey on the faith and credulity of women who have lost their charm. In doing so they overlook one of the most potent means of safeguarding their skin, the true and natural product innocent of those wild claims and extravagant promises impossible of fulfillment which, like those of current campaign politicians, are the curse of the age.

While honey might seem to be the newest beauty treatment of the day, representing one of the finest uses to which it could be put; yet it is one of the oldest, for the use of honey on the skin has ever been practised as an ancient art, and lotions with honey as a base, mixed with almond, for instance, or milk, or some other ingredient, have been among the most splendid recipes for the preservation, stimulating and strengthening of the skin.

The product of the bee, in its multiplicity of blessings, has afforded a means towards the heightening of Vanity in every age—and of that Beauty that shines forth radiantly and naturally as the result of Health—the basis of all beauty. It would seem that honey is Nature's way of toning the skin, of smoothening and softening it, and honey and milk would make it bloom like the promised land—no less.

Honey as a beauty treatment was well known to the ancients. It was used for retaining youth in the long, long ago, for preserving that personification of pure and abstract beauty

in a more natural age, when men marveled at virgin beauty and the classic culture of older civilizations.

Now again honey serves to a great degree from the standpoint of health and facial beauty that exquisitely expresses it—not through the usual clown face, of course, that face thick with powder, rouge, mascara and lipstick, so much like the painted faces of wild women or savage tribes, but the face lit with transcendent charm, finely formed, and blessed with a sweet loveliness that is the pure product of health and cultivated living.

More natural loveliness, widely coveted, springs from the natural health product than could possibly emanate from thousands of over-rated lotions and even dangerous panaceas for beauty avidly seized by millions of women in whose breasts hope springs eternal as they yearn for that promise of beauty in the bottle so ambitiously advertised—only to find their beauty fading faster by such worthless "treatments."

Once more, however, let there be a reawakening or rebirth of beauty and the promotion of larger measures of health by means of more extended external use of such products as honey as a facial.

## Alberta Figures

More than 1000 beekeepers are operating in Alberta at present, according to S. O. Hillerud, Provincial Apiarist. While this is an increase over previous years, it includes a number of those operating a small number of colonies. Total production is estimated at 1,284,000 pounds, a slight increase over last year. Total value at 10 cents a pound is \$128,400. Last year's average price was 9 cents a pound.

F. H. Fullerton,  
British Columbia.

## Comb or Extracted Honey—Which?

By W. H. Scholz,  
Nebraska.

More time and labor are required to produce comb honey than to produce extracted honey. Outside of the extracting equipment, the comb and extracted honey outfits do not differ much in price, the first year, except that the comb honey producer will have to purchase section boxes and foundation annually. And in good seasons, everything is in favor of extracted honey because the same combs can be used year after year.

Bees managed for comb honey must each year rebuild all the comb in which to place their surplus honey

and they do not enter comb honey sections as readily as they enter the large combs in extracted honey production. Extracted honey producers find that by giving plenty of super room, swarming is partially prevented, while the comb honey man must keep his bees crowded unless he wishes to find his supers with a lot of unfinished sections at the end of the season.

Ripe extracted honey two-thirds sealed will result in a good grade of honey. Sections one-third filled, however, must be sold at a low figure if they are sold at all. However, extracted honey may be produced in many locations and in many seasons when comb honey will prove to be a failure; for, if any quantity of comb is to be built, the nights must be warm in order that wax may be secreted freely and combs built readily.

In my opinion, the average honey producer will find his best profit in extracted honey.

## Experience in Liquefying Honey

We have two large storage tanks for extracted honey holding one thousand gallons each. We often hold honey in storage in these for some time. This past season we were short of cans and as the great bulk of our honey moves only ten miles from home, we receive our cases and cans back. In holding these tanks with two thousand gallons of honey at the close of extracting, it granulated, and was left in this condition.

We previously thought this might sometime happen so we installed copper coils in the tanks through which we could circulate thermostatically controlled hot water at one hundred and fifty degrees.

We had a demand for this honey at the end of a near zero spell. We started to liquefy. Did it take coal! For seven days we kept the pump going forcing water at one hundred and fifty degrees through those coils to liquefy this twenty-four thousand pound block of honey. According to all theories, this honey should have been ruined. Very much to our surprise it was very white and clear as a crystal.

The question that arises in my mind is this: If honey is not subjected to too hot a heating element, will it discolor as long as there is granulated honey to absorb the heat? I noticed that for several days the liquid honey did not rise above one hundred degrees. There was no agitation, save the natural circulation due to the heat.

We should like to know the experience of someone else.

Alan Eby,  
Ohio.

# Package Bee Supersedure

By H. W. Sanders,  
Manitoba.

THE ARTICLE by G. G. Puett in the March issue raises again one of the most puzzling problems that we contend with here in Manitoba. According to the American Bee Journal there are \$75,000 worth of package bees brought in every spring and there is little question in the minds of most of us that there is more profit to be secured by killing all bees in the fall and buying new ones in the spring if—and there are several “ifs” in the question. One of them is supersedure.

You get a package of bees from the express. It has come through in splendid shape, apparently. There are few dead bees on the floor. The cluster is quiet and contented. There is still plenty of feed in the can. You introduce them to a nice clean hive, with a fragrant smell of bygone honeyflows, several empty combs and others containing plenty of feed. They start out like a million dollars, with the queen out and laying nice worker eggs within a day or two. Then ten days later you make your rounds and you find the queen missing and several miserable pinched and starved looking queen cells. If you are wise you have some spare queens coming in and you immediately requeen. Usually it is possible to retrieve the colony, but they have lost a precious week or more at a time when every day counts. Often you just lose the new queen as well as the old one and end up by disgustedly uniting the wreckage with the nearest colony and trying to forget about it.

Out of hundreds of packages handled by ourselves and by neighbors, possibly ten per cent supersede their queens in this manner. Some seasons are worse than others, and beekeepers here claim that the packages from certain shippers do better than others. Out of many discussions on the matter there seem to be two schools of thought. One is that represented by Mr. Puett's article and looks for the cause to the proportion of young bees in the hive. Obviously before young bees appear from the new brood the bees of the package are from three to six weeks old, and their thought is that the bees sense something wrong in the lack of young bees and so requeen. As he suggests, the remedy for the condition, if this is really the cause, is the provision of young bees by adding sealed brood from other colonies, or by adding shipments of queenless bees from the South at a later date. It would be interesting to know if any-

one has actually tried either of these remedies on a large enough scale to demonstrate its efficacy.

The other school of thought looks for the cause, not in the bees, but in the queen herself. We had a visitor from the South last fall who made the interesting suggestion that superseded queens were those which had been permitted to lay for several days in the nucleus after mating, before they were caged and sent off with packages. When one comes to think of it there is a tremendous shock in such a procedure to such a delicately organized creature as a queenbee. Nature fits her up with a metabolism that is able to consume many times her own weight of food in a day and turn it into thousands of eggs, and the moment she is mated nature expects her to start laying, increasing daily up to a very large output. Then without the slightest chance to adjust her anatomy to the change we catch her, cage her and send her on a five day journey, following which she is released in a totally different environment and expected to “carry on” as if nothing had happened. The marvel is that so many do survive and head good colonies.

We have repeatedly noticed that it seems to take the bees a few days to realize their change of condition. They are shaken from the combs in the South under conditions that approximate our midsummer-warmth, honeyflow, and so forth. They often build combs in the cages. When we shake them into the hives if they happen to cluster on the side where we have removed the combs they will build combs fast, and big ones too, for the first day or two. By this time they have begun to fly out and they find themselves in a cold northern land. Even in May our nights are often chilly, and in April we often have snow, even towards the end of the month. After about three days, unless there is an exceptional flow from willows, or the dandelions are coming out, you will not find those bees building comb at all. If there is foundation present they will just eat holes in it. All of which goes to show that there is a lag in the bees consciousness of change, and this may be the reason for supersedure—the shock of the discovery of their new environment.

Some of our beekeepers claim that the queens and bees from certain shippers do very little supersedure. It may be that these shippers are very careful to take only queens that

have just been mated, and before they get “heavy with eggs,” and that this answers the question. Bees that come out of winter quarters into a land that is still cold and inhospitable, have a queen that is only slowly increasing her egg-laying. Possibly the package bees under conditions above referred to react in the same way to a queen that will develop her capacity more slowly. It is just a guess.

It would take one of the worst gambles out of this end of the package bee business if some definite work could be done to try to work some of these theories out.

## Cooperative Apiary Inspection

By Harry A. Lefler,  
Illinois.

One of the things that has impressed me as an apiary inspector is the attitude of passive resistance that many beekeepers have in regard to bee disease, and in relation to their neighbor beekeepers. This attitude shows itself in many forms; jealousy, distrust, and fear of the opinion of others.

Often in asking a beekeeper for help in locating bees or in requesting them to get together and talk things over, I have heard these words; “He might think I was meddling,” or “He might get peeved, and I don't want him mad at me,” or “Yes, his bees are a mess; that's where our trouble has been coming from but I'd rather not go with you.”

This “that's right but who cares” attitude is discouraging to the inspector who wants to help keep down foulbrood. Why should the inspector be wildly enthusiastic and optimistic when every beekeeper seems not to care? Wouldn't it be much easier and cheaper instead of constantly shaking bees and buying new equipment and fussing about the neighbors, to organize locally? Then each can help the other and be in a better position to help the inspector.

Some of that good old public opinion coming from the right source would do wonders toward making that hap-hazard beekeeper change his ways. There are a comparatively few beekeepers who in this respect, deserve only praise. They help the inspector in every way possible and help their neighbors by giving information and instruction.

It may perhaps be thought that this also is the work of the inspector but remember that the inspector cannot be every place at once and that he cannot thoroughly cover his territory in the short season that inspection work can be safely done.

His work is less than useless without some cooperation from those he

is trying to help. The beekeeper who does help is a constant joy to the inspector, not because his work is any less but because of his moral support, and because he makes the inspector feel that the work is really helping and is being appreciated. Without the active support of the beekeeper, the inspectors will soon become much discouraged.

As a beekeeper, remember that you can help yourself by helping your local inspector. Try it.

## Tested Recipes, Illinois State Fair, 1934

### 2nd Prize—Honey Crisp Wafers

- ½ cup butter
- 1/3 cup sugar
- 1 tbsp. lemon juice
- 1 cup honey
- 2½ cups flour
- 3½ tsp. baking powder
- ¼ tsp. salt
- 1 egg

This must be thoroughly mixed, cream, butter and sugar. Add unbeaten egg, beat well. Add honey and lemon juice. Then flour mixed and sifted with baking powder and salt. Roll dough thin, cut and bake in moderate (350° F.) oven until nicely browned.

### 2nd Prize—Honey White Cake

1¼ cups sugar, ¾ cup honey creamed with ½ cup shortening. Add 1 cup milk alternately with 3 cups sifted flour in which 4 tsp. baking powder has been added. Lastly fold in 6 stiffly beaten egg whites. Bake in layers, 20 to 25 minutes.

### 3rd Prize—Honey Yellow Cake

- ¾ cup butter
- 1¼ cup sugar
- 1 cup, less 1½ tbsp. water
- ¾ cup honey
- 3 cups Swansdown cake flour
- 2 tsp. baking powder
- ½ tsp. soda
- 3 egg yolks and 1 egg white
- 1 tsp. vanilla

Cream butter, sugar and honey well. Sift flour, and measure. Add baking powder and soda; sift together. Add water and flour alternately. Add flavoring. Fold in stiffly beaten eggs and beat vigorously. Bake in a moderate oven.

Mrs. Rutha King.

## Notes on Apiculture and Uses of Honey

We acknowledge the receipt from Italy of the above named revised edition of a work by the Signor Carlo Carlini, of Sant-Arcangelo di Romagna, an experienced beekeeper of Italy.

The book contains 108 pages and 42 illustrations.

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## THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

### TO CLEAN EXCLUDERS

Please advise me the best way to disinfect queen excluders that have been on diseased colony. I would use the Hutzelman's Solution but do not have very many and do not wish to purchase a five-gallon can. Would dipping them in gasoline be satisfactory? Please give me your best advice. IOWA.

Answer.—Yes, I believe that dipping those excluders in gasoline and leaving them in it a few minutes would kill any germs. But gasoline evaporates quickly and unless the work is thorough, it might not be sufficient. If exposed to a flame for a few seconds, they would be fully as well disinfected.

### SWARM SOUND—MATS—DEEP COVERS

1. Is there a definite pitch or period of vibration to the sound of a swarm of bees? Does the sound of a swarm differ from that of robbing or from that of excessive working?

2. Are straw mats still on the market?

3. Can deep telescope covers be had for the Modified Dadant hives? Does it pay to use them for brood protection? IOWA.

Answer.—1. Yes, there is a definite pitch to the sound of a swarm of bees, and it is more peaceful than either robbing or excessive working, although very much like the latter. When bees are full of honey, their wing vibration must be identical with that of the bees of a swarm, for these are full of honey also. But robbing bees have a very high pitch.

2. Straw mats were offered for sale by us at one time; but there was no demand for them, so we quit offering them.

3. No they don't make telescope covers for the deep Modified Dadant hive, because they add to the cost. But I believe it would pay beekeepers to use them. However, so many different hives are sold without telescope covers that the telescope covers appear out-of-date.

### LOCATION RELATIVE TO SOURCES

1. Some of my bees are located about one mile from alfalfa and little clover meadow, which is our main honey crop. I could move these bees to within one-fourth mile or less to alfalfa and clover, but would it be any advantage? Does it not require about a mile's flying time for bees to assimilate the nectar to produce honey? Does this process take place during their flight only?

2. Do you think bees are more efficient, where hives are near a spring fed clear creek, or do they obtain most of their necessary moisture from plants, trees, etc.?

Recently you had a short query about bitterweed honey, we have this very bad in some parts of this county, especially in a dry autumn, when there is nothing else for bees to work on; honey is very bitter, will send you a few of these flowers when they bloom this autumn. ARKANSAS.

Answer.—1. I do not believe that the difference in the distance makes any difference in the results. Of course one cannot say anything positively about this. I do not think the matter has been tested by analysis, but I do not believe it would be found of any importance.

2. If you have a large number of colonies, you will find them going to a spring or water course for water. But most of the time they will get all the water they need off the grass after the dew forms on the leaves. During a heavy honeyflow, they need very little water. The nectar contains enough for their needs.

### QUEENS AND REQUEENING

1. I have two hives of black bees and would like to make them Italians. How would it be if I took a frame of brood with a queen cell out of an Italian hive and put in the black hive and kill the black queen? Would they accept it?

2. How often should I go through my hives and cut the queen cells out, if any?

3. How can you clean a queen excluder of wax and burr combs so that the bees can pass through it freely?

4. Can I do anything to stop the bees from coloring the tops of my section boxes up?

5. How can you find a black queen? I can find yellow Italian queens but I can't find black queens.

6. How can you get rid of drones?

PENNSYLVANIA.

Answer.—1. If you first kill the queen of the black colony and the next day give it a queen cell with brood, they will accept it. Better yet, if you will exchange its brood for the brood of an Italian colony, the day after killing its queen, they will be sure to raise an Italian queen, as there will be no other chance for them, even if the queen cell is destroyed.

2. It is not necessary to cut out queen cells in your hives, if the bees have plenty of room, so that they are not desirous of swarming. Cutting out queen cells does not serve much as they may rebuild new ones at once if you have not supplied them with sufficient room.

3. A queen excluder should not be stopped up with wax and burr combs. But if you find it so clogged up, you may readily melt out the wax and burr combs by passing it through the flame of a lamp.

4. The only way in which you can keep the bees from coloring and soiling your section boxes is by keeping those section boxes off the hives till the crop begins.

5. A black queen is harder to find than an Italian one, but we have found her by shaking the bees on a sheet in front of the hive. The queen may be seen more readily as she runs towards the hive among the bees.

6. To get rid of drones, you should avoid breeding them, by removing the drone combs in spring and replacing them with worker combs. You should breed drones only in the colonies which you may select as breeders. We always remove drone combs from colonies and replace them with worker combs. This should be done in the spring. It is very important in our opinion and not enough people do it.

### THE DEMAREE METHOD

Next year I intend to practice the Demaree plan of swarm control and am asking some questions about it:

1. After you have the hive, body containing the brood, above and want to add supers, do you put the first above the hive body or do you put it under next the excluder?

2. What is the danger of a colony swarming when treated by the Demaree method? Would you suggest the Demaree plan a good one for a beginner to practice?

MISSOURI.

Answer.—1. In all the manipulations of the hive, there is need of exercising one's judgment, because the conditions are almost always varying so that what is good in one case will not fulfill requirements in another;

for instance the strength of the colony, the amount of honey in the fields, the weather, etc. If the brood is still being taken care of and fed in the upper story, it is best not to put any supers under it, because pollen may be brought into it. But when the upper brood is all sealed and the queen has larvae below, the super may be set between the two, if judged best, without fear of having pollen stored in it. If you put it under the excluder, there is a possibility of the queen laying eggs in it, if she is short of room below.

2. The Demaree method is good, but do not use it and forget about your bees. If you don't wish for swarms, you must give them plenty of ventilation and plenty of shade. Usually, the colonies treated by the Demaree method do not swarm but there is nothing positive about it.

#### COMPARISON OF RACES

What are the respective merits of the Italian, Carniolan and Caucasian bees?

HONOLULU.

Answer.—I believe all three races have similar qualities. In fact, if we accept the testimony of our old experienced friend Ph. J. Baldensperger, the race of bees of southern France and most localities close adjoining the Mediterranean is of similar ability and gentleness as those three races. But then, you will find the beekeepers extolling their bees, all over the world.

The great question in my mind is to keep the race pure. Hybrids sometimes do wonders but their qualities are not fixed, therefore the daughters of a very valuable queen may have very little value. To keep the races pure there is no better than the Italians. It is true that the same may be done with the Cyprian; the only difficulty with the Cyprians being that their hybrids are so exceedingly cross that any one who has tried them side by side with other races does not wish to have them, on account of the effect on hybridization.

The Italian race is the race which is easiest to keep pure. You may do better accidentally with some Carniolans or some Caucasians. We have had Caucasian bees that did wonders, but on the whole, nothing has surpassed the Italian bees. If we continue to select, in America, let us make our selections among the bees of Italian stock.

#### WEIGHT OF HONEY

How is honey weighed? Twelve ounces to pound or sixteen ounces? MISSOURI.

Answer.—I have never heard of honey being weighed by the old system of apothecaries weight, twelve ounces to the pound. It is no longer kept for sale by apothecaries, but by "greengrocers" who sell it by the ordinary pound weight. It is getting time for the world to drop those old irregular methods and adopt something sensible, such as the metric and decimal systems. They look intricate but are exceedingly simple and rational. That is why scientific men adopt them.

#### SHARE FOR MANAGING

Would you please tell me what share of honey would be right for a person giving all the care to an apiary? The owner of the apiary furnishing all equipment, bees, and the land on which the bees are kept. The tenant to give expert care, being a man conversant with modern methods of management.

The tenant delivers honey to landlord in salable form. INDIANA.

Answer.—We usually figure that the owner is to get half and the apiarist the other half, each paying his share of the expenses,

such as sections, hives, etc. The share of the apiarist in the costs may be easily figured when the crop is harvested. If he pays nothing, I hardly think he is entitled to half, as hives, sections, foundation, etc., cost quite a large amount and help make profit.

## American Honey Institute News Notes

(Continued from page 317)

making entries to the **Second National Honey Cookery Contest** is less than four months away. You can stimulate honey sales during the hot months by promoting the contest every day. You can secure the co-operation of your beekeepers by discussing the program at your county field meets. You can develop publicity that increases honey consumption by adding a woman's auxiliary to your county association. The contest program was outlined in the Annual Report mailed you two months ago. Soon the prizes will be announced (more than fifty of them of which over a hundred dollars is in cash). Watch all the bee journals and write the Institute how many copies of rules and entry blanks you will want to distribute to your local ladies.

The outline covering the auxiliary organization is available upon request.

#### Your Summer Field Meetings

If you want a different program with publicity stunts, honey in the lunch and literature that will develop honey sales, write for the Institute's suggestions on this subject. One group is going to include the following two stunts at their July meeting.

1. Contest for Beekeepers. Subject: My Biggest Bee Yard Blunder. Time: 3 minutes. Open to all Beekeepers. Judges: three prominent local people not connected with the beekeeping industry, preferably an editor, teacher, and business man.

2. Contest for the Ladies. Subject: My Favorite Honey Recipe and Why. Time: 4 minutes. Each lady entering would have a sample of her honey dish for judges to taste, and include a brief demonstration in her presentation. Judges: home economics teacher and home demonstration agent.

3. Prizes — depends entirely on the local group. Our outline suggests prizes and how to get them.

Detailed suggestions for such programs are available upon request.

Honey continues to be mentioned to the advantage of the industry in many papers.

In "American Home" in a charming article on "The Gingerbread Fair" held each spring in Paris, Sue Moody writes, "It is really cake, made of sweetest honey." Six gingerbread recipes, each containing about 2/3

cup of honey, follow with pictures.

"The Bakers' Helper" remarks that the demand for honey baked goods is increasing. A formula for Hermits in the May 4 issue calls for 1/2 pound of honey, another for Chocolate Tea Bread, in the issue of May 18 uses honey and suggests that a fine grade of honey graham crackers be used for pie crust.

"Cold Cooking" (Westinghouse) suggests mixing ingredients for baking powder biscuits and then storing them in the refrigerator to be used as needed. "They will glorify any meal, especially if served with honey and fresh sweet butter," says Miss Sparkman.

"Farmer's Wife" has a recipe for "Dutch Honey" (a homemade syrup) using one cup of honey. "Forecast" suggests Honey Walnut Blanc Mange in a menu and Rhubarb Sponge Pudding calling for 3/4 cup of honey. "The Ladies Home Journal" suggests a Honey Salad Dressing calling for 1/2 cup of honey as a perfect complement for fruit salad. "Parents Magazine" wants us to try fresh pineapple wedges dipped in honey.

More than 50 per cent of the magazines that the Institute has been able to check this month contains copy on honey or bees or beeswax.

Last but not least, do not forget National Honey Week this year comes November 10 to 16. You can get programs by writing to American Honey Institute. Better get busy early.

## Remedy for Skunk Trouble

Do skunks bother your bees? Well, here's a way to get even. Just put down in the hole where the skunk lives, a spoonful of cyanogas and close the entrance. When Mr. Skunk gets ready to come out for his next repast, he'll find himself dead and buried. Mean trick, but it works.

E. S. Miller,  
Indiana.

## Iowa Apiarist's Report

Report of the Iowa State Apiarist for 1934 has recently been issued. As usual it contains the papers read at the beekeepers' convention. This issue contains 69 pages. Among the many interesting papers may be mentioned one by Dr. J. N. Martin on the problem of seed production in red clover. Dr. Martin shows that the honeybee is the principal agent in the pollination of red clover.

Copies of the report can be secured from F. B. Paddock, Ames, Iowa.



By G. H. Cale

WHEN Coleridge's Ancient Mariner found "water, water everywhere, and not a drop to drink," he was blood brother to the Illinois beekeeper of 1935 who, wet and grimy, finds water, water everywhere and little time to think.

We have wallowed in the mud, had chains on and off until we actually like to put chains on an automobile tire. It's such a pleasant occupation. And to have dry feet would be uncomfortable. Webs have grown between our toes and if our feet get dry, they ache.

— o —

Joking aside, it is a contrast to last season. At this time some of the hottest weather of the year had occurred. Yesterday morning, June 19, I built a furnace fire before leaving home. Slept upstairs with blankets on the bed. Last year on the same date, either slept outdoors or downstairs on the porch. There was no moisture anywhere. The prayer was for rain.

Ever since the governor of Colorado had the good people of that state pray for rain about a month ago, it has rained continually and all dry weather signs fail. Rains of seven to eight inches and three to four inches are common; rivers are out of their banks, roads are impassable. But in spite of all that, we have been able to do fairly well by the bees and have them in good shape.

— o —

If Wilbur Sheron, in this issue, is right about the wet season being a poor one for sweet clover honey, then we may not get much of a crop after all as long as this condition of soggy fields and flooded valleys continues. Nevertheless the bees are in good sweet clover locations with supers on. And that's all we can do.

— o —

Brother Alfonse Veith, St. Meinrad's Abbey, Indiana, asks for an explanation in "All Around the Bee Yard" of why bees sometimes gnaw down combs not even ten years old, while other colonies, with combs of twenty years or more, never do so.

"In 1934 a colony gnawed large pieces from several combs on one side of the brood chamber. After replacing these combs with new fully drawn ones, they repeated the same thing. This happened in summer during a dearth, with supers on."

I don't know why bees do this,

Brother Veith. Colonies of bees seem to be as individually different as people. Some people are crabs and some are genial friends. Why? Apparently the "crabs" among bee colonies relieve that feeling of resentment toward the world in general by biting down their combs just as crabs among people would bite a ten-penny nail in two if they could.

— o —

The peculiar idiosyncrasies among bees are interesting to observe. Hybridization between races for instance produces bees that may be cross as Tophet or gentle as goldens. Some are nervous, flighty hand stingers. Others are quiet, easy going, lovely creatures. So the hybrid is never a safe proposition since you can never be sure of its disposition or behavior. The pure Italians or the pure Caucasians are usually gentle.

— o —

Brother Veith also says that May in Indiana was an exceedingly wet month but, in spite of it, his "best colonies are pretty well filled with honey." It must be white Dutch clover. We do not have any of that out here in Illinois this year. Prospects for sweet clover are good but it will be late. Probably the flow will not start until the last week in June or the first of July.

— o —

He goes on to say too that the excessive swarming which was mentioned last month, is certainly caused by abnormal weather conditions — "You have certainly observed that Italian colonies with young queens and plenty of room will not swarm during a continuous honeyflow. However, if the flow is interrupted every few days, quite a few bees contract the swarming fever." That is our estimate of it too. We note that those queens introduced last fall seem less inclined to contract the swarming fever than the older queens. I imagine that a majority of our trouble has been among queens over a year old.

— o —

Our latest plague is a flow of honeydew. It probably will bless us to a certain extent because it will not be necessary to feed the bees up to the sweet clover flow but it is disgusting, black, disagreeable stuff and during this open and shut weather, it has aggravated the tendency to swarm.

Bees worked on it late today, later than I have seen bees work on any other source for a long time. I was in one yard when it was almost dark and still the bees were coming and going vigorously with the moon just rising to help them. One time I saw bees working on tulip poplar in Maryland in the moonlight.

— o —

George Harrison, Jr., of Virginia, comments on my remark of last month that the only successful way we have found to control swarming in the large hive is to remove the queen, cut out all queen cells and in ten days give a new laying queen. He says: "That is the method I use regardless of the kind of hive. Why monkey with a cell laying queen? Of course there are conditions in which the queen is not to be blamed. If the colony becomes crowded for room or at the beginning of the main flow when swarming is greatest, I may just kill the queen cells. Often I have done this and have no further trouble the rest of the season but if the cells are advanced or the queen looks old, I usually just pinch her and cut out the cells."

"To continue cutting out cells only promotes loafing. I have never been able to see any difference in the way a queenless colony building cells and a queenright colony works. They even mate a queen of their own and go right on doing good work. Of course such a colony suffers later from the lack of worker replacement. Except at the beginning of the flow or if a colony becomes crowded, a cell laying queen is usually on the down grade and if the removal of brood or any other method is used to keep her on the job to prevent swarming, the colony suffers later anyway from lack of brood."

— o —

This is probably just what our friend Newman Lyle out in Iowa would say. With his method of replacing failing queens from storage nuclei as fast as they show any signs of failure, he is able to keep colonies up to popping strength the best of any beekeeper I have ever seen. We have never tried it but intend to do so as soon as we can get squared around to it.

## Bell Gets Writeup

B. F. Bell, deputy inspector at Kingston Mines, Illinois, also a commercial honey producer well known to many Illinois beekeepers, received a two-column writeup with a three unit picture spread in the Peoria paper. That's good fortune.

Such helps do not come easily, but when they do, they have a great value in advertising honey and getting people to know the producer better. We congratulate Mr. Bell on this opportunity.





### Knox County (Illinois) Meeting

The Knox County Beekeepers' Association held its first field meeting at the home of Ernest Huggins, Maquon, Illinois, May 29, 1935.

Elmer Kommer, Woodhull, Illinois, State Bee Inspector, was the speaker of the day. He demonstrated the treatment of American foulbrood. This county has been in need of more education on controlling this disease as it prevails over the entire county. There was a good attendance at this first meeting. The following officers were elected: Raymond Warren, Galesburg, President. R. O. Baird, Williamsfield, Vice-President, and Ernest Huggins, Maquon, Secretary.

### Colorado Beekeepers Plan State Organization

Harold Ault was elected president of the Larimer County Beekeepers' Association at a recent meeting in the laboratory at Colorado State College. The group named A. H. Dunn vice president and W. C. Evans secretary-treasurer. All three live in Fort Collins. About half of the beekeepers of the county were present. James Dutcher, Weld County Apiary Inspector, and R. G. Richmond, Deputy State Apiary Inspector, spoke on legislative matters. Plans for the formation of a state association were made.

### Meeting of Kenosha County Beekeepers

The Kenosha County (Wisconsin) Beekeepers' Association was organized at a meeting March 6 at the court house, Kenosha. Richard Hanson was elected president; James H. Birchard, vice-president and Oscar Nelson, secretary and treasurer.

The apiarists met with James Gwinn of the State Department of Agriculture and Markets, who explained production difficulties encountered in various parts of the state as well as honey marketing problems.

Local beekeepers are planning a program to seek cooperation with Kenosha County orchardists.

### Fond du Lac County Beekeepers Meet

Milton M. Ehrhardt, Oakfield, was elected president of the Fond du Lac County (Wisconsin) Beekeepers' Association at the annual meeting held March 16 in Fond du Lac. A. J. Schultz, Ripon, was named vice-

president and William Sass was re-elected secretary-treasurer.

The county association authorized its officers to petition the legislature to repeal the occupational tax on beekeepers, declaring it to be unenforceable. The beekeepers declared that since the cost of inspection of bees is comparatively high, they are not objecting to the tax of twenty-five cents for the first hive and ten cents a hive for each additional hive, but want an enforceable law.

Of the funds raised by the special assessment or occupational tax only 20 per cent remains in the town and the balance goes into the general fund of the state treasury, not being segregated for the benefit of the industry, it was pointed out.

Despite the fact that the state received 80 per cent of the funds raised by the occupational tax, there is no guarantee that the state will inspect the hives in any county, it was declared.

### Massachusetts Farm and Home Week

Bee diseases, particularly foulbrood, are to be the main topics for discussion on the beekeepers' program of Farm and Home Week at the Massachusetts State College. Farm and Home Week this year is scheduled for July 23 to 26 inclusive, with the bee program coming on the 25th.

Dr. J. I. Hambleton, senior apiculturist of the United States Department of Agriculture; George Meigs, president of the Massachusetts Federation of Beekeepers; and J. H. Merrill of Raynham, former apiculturist of Kansas, are the principal speakers listed on the program.

Fifteen other programs are included during the four days. The list includes homemaking, food preservation, Parent-Teacher Association, Grange Day, forestry, nurserymen, school of the flower show, home flower gardens, fruit growing, lawns, cash crops, commercial vegetables, seedmen, and poultry.

### Woodbury County (Iowa) Beekeepers to Meet July 11-12

The Woodbury County Beekeepers' Field Meet will be held at a bee yard on the George Willis farm on highway No. 20. This place is four miles west of Moville and ten miles east of Sioux City.

The date of the meeting is July 11 and 12. For those who wish to

camp out, there are excellent camping grounds at this place. Tourist cabins may be had at Moville or Sioux City.

The program will include demonstration of apiary management, a general picnic dinner, one evening of entertainment at Moville and a tour of some large yards of interest.

Beekeepers of adjoining states are invited to attend. E. G. Brown.

### Southeastern Kansas Beekeepers' Picnic

The Southeastern Kansas Beekeepers' Association will hold its annual picnic Sunday, July 23, three miles north of Chanute, Kansas, at the farm of E. L. Yount. All beekeepers are invited to attend. A basket dinner will be served and there will be a good program.

Wm. Kreger, President.

### Joint Meeting of Ohio State and Montgomery County Beekeepers' Associations

The Ohio State Beekeepers' Association and the Montgomery County Association will meet jointly July 26 and 27 at Dayton, Ohio. The program is tentatively arranged as follows:

On Friday, July 26th, the out of town people will assemble not later than 1:15 at either Hotel Beckel or Gibbons. These are both located in mid-town. At that time, they will begin a tour to see the Patterson Flying Field, the largest experimental plant of its kind in the world. The visit with a special guide will require two hours. Following this visit, the party will proceed either to some apiaries or to see some industrial plant. At 7:30 in the evening, a meeting will be held at the Dayton Library Museum. The following morning beekeepers will meet at the hotel and then drive to the grave of Rev. Langstroth which is in Woodland Cemetery in Dayton. We hope to have Mr. E. R. Root with us at this time. From there, the meeting will proceed to the Colosseum, Dayton Fairgrounds where the program will be concluded as printed in the June issue of "American Bee Journal."

Penn G. Snyder, Secretary.

### Minnesota and North Dakota Beekeepers at Crookston

Plans are under way for the Minnesota and North Dakota Beekeepers' Associations to hold their summer meeting at Crookston, Minnesota, July 19. Mount St. Benedict will be host to the beekeepers. The meeting will begin at ten o'clock. A large attendance from the Red River Valley and adjoining territory is expected.

J. A. Munro, Secretary-Treas.

### Illinois Beekeepers' Picnic

The annual outing of beekeepers and their families of Illinois District (Please turn to page 345)

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 American Bee Journal • Hamilton, Ill.

From the American Bee Journal, November, 1895.

## Reminiscences of Rev. L. L. Langstroth

By Rev. W. F. M'Cauley.

WHEN I was a mere boy, my oldest brother, 13 years my senior, became interested in bee culture. I remember hearing him at that time speak of the "Langstroth" beehive. Little did I then think that I would eventually become the pastor of the inventor and be, for over eight years, perhaps his most intimate ministerial friend.

In 1886, I became the pastor of the Park Presbyterian Church, Dayton, Ohio, and in August, 1887, Bro. Langstroth—such was the geniality of his disposition that, notwithstanding his age, I always thought of him as "brother" rather than as "father"—moved to the city with the family of his daughter and her husband—Mr. and Mrs. H. C. Cowan. It was a delightful family circle of three generations that was thus added to my congregation. In this my first pastorate I received material help from association with Mr. Langstroth, whose good nature was always like an overflowing fountain, and whose friendship was "steady as a balance wheel."

He could enter sympathetically into another's experiences; and however much he might differ from you on some points, you were always sure of an unprejudiced hearing, and of a sweet converse that never descended to the level of a debate. His habit of scientific investigation led him to apply the same method to other matters: he did not seek to establish a theory, but to ascertain the facts. He was not a man to practice concealment, though prudent in the expression of his views: when he discovered a truth, it was a thing to be made known, not juggled with; hence, his friendship was a positive, not a negative, quantity. He was an all-around man, useful in any position, with a large amount of adaptability, a workman of skill, able for the blasting of refractory ledges, or for the fencing out of ecclesiastical quicksands.

He passed through two periods of melancholy, resulting from his recurring physical ailment, while in Dayton; the first of these lasted, I think, about three years. At such times he did not have a single comfortable thought; but though he could not summon energy to undertake any task, yet his mind was still clear, and he held on by faith to the promises of scripture. It was a beautiful in-

stance of simple trust through darkness like that of the "shadow of death." When undergoing these experiences, he cared to see no one, and if asked if he wished to converse with a visitor, would probably say, "No;" yet if any one were admitted unannounced, he could probably be led into conversation, and derive some benefit from the visit. When the attack passed away, his activity and vivacity were marked. It was like the shining of the sun after weeks of rain and gloom, when all the world seems new. It is probable that at such times he was tempted to overdo his strength, and doubtless attempted too much at times, in the rebound from a state of inaction and depression.

Mr. Langstroth told how, on one occasion, when outraged by enemies, he went to hear Henry Ward Beecher preach, and how the sermon led him into a different frame of mind. He went to Mr. Beecher and expressed his gratitude for what the preacher had said. As I recall, Mr. Beecher took him home with him. At any rate, he entertained Mr. Langstroth over night on one occasion, and in the morning cooked the breakfast for his guest, his own family being absent from home at the time.

Mr. Langstroth used to tell with great gusto an incident illustrating a type of Sabbath keeping that did not employ the religious opportunities of the day so as to make them a pleasure. "Oh, father," said a member of the family, "when shall we be through with this?" "Do you see that iche yonder in the mountain side?" "Yes." "Well, when the sun gets down to that, the wust will be over!"

These incidents show the genial nature of our friend, and his happy and companionable disposition, when in his normal frame. These were traits which appeared in conjunction with a deeply serious cast of mind. He could not fail to impress those who knew him with a sense of the distinctly spiritual trend of his thoughts. His life was an example of a massive purpose of soul, that towered before you like a mountain, and made you feel your own shortcomings; but there were groves of songsters on that mountain side, and laughing streamlets that leaped from rock to rock and spread themselves at your feet.

He sought to embrace every opportunity for doing good. He was specially concerned with the subject of ventilation, on which his ideas were most excellent and scientific. He once said jocosely that one of the worst of all cranks was the "ventilating crank," and he thought he might still do some good by helping to secure pure air in churches. He said that depravity in the pulpit and pew were bad enough, but that to have depraved air in addition was too bad. Through his suggestion, we were enabled to improve the ventilation of the old Park church auditorium without expense; and so thoroughly did he impress the importance of the subject upon me, that when we erected a new church on my second Dayton field, it was provided with a complete system of ventilation.

He related to me an incident of his tutorship in Yale, and told how he had given personal attention, out of hours, to students in special need of instruction. On one occasion on account of previous illness, he missed the hour for his class. It was a custom in Yale for the students to dismiss themselves when the teacher was late, but one of the members of the class said: "Is this the way to treat Tutor Langstroth, who has been so kind to us?" and they appointed one of their number to inform the teacher that it was time for the recitation. He was found still in his room, but the class waited patiently for him.

A second time he was late, and a second time the class waited, and then Mr. Langstroth informed his scholars that if he was late again they might dismiss themselves without ceremony.

On the journey to and from the Park, Mr. Langstroth showed considerable physical vigor, needing no assistance in stepping on and off the cars, saying, "Only give me time." He spoke with great satisfaction of the fact that his memory had brought back to him things at one time forgotten. He quoted favorite passages, and even Homer in the original. I have now a little pocket present which at that time he said he would request to be sent me. The matter, though small, did not escape his attention, but the article came promptly, after the Toronto convention. He spoke of his recurrent physical infirmity, and said that he thought Shakespeare had written Hamlet out of his own experience, or that of some friend—he had so exactly described the conditions of the case. He quoted from Hamlet where he says that he had lost all his mirth, "foregone all custom of exercises," that the earth was like a "sterile promontory," and the air and the "majestical roof fretted with golden fire," like a "pestilent congregation of vapors."

Mr. Langstroth told how a certain scene in New England had seemed all



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Bright yellow and three bands. Also  
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We are Stevenson's Golden Italians, Real  
Queens of Quality.  
Our bees are large, the best of honey producers, and so gentle that it is a pleasure to own them.  
We are overcoming prejudices and winning favor wherever introduced.  
Queens untested, 50c. Tested, \$1.50.  
Write for circular.  
**STEVENSON'S APIARIES, Westwego, La.**

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loveliness when he drove through it one day, free from physical depression, and how it possessed not the slightest interest for him on another occasion, when in a state of melancholy.

The next morning after this conversation, we parted at the Union station in Toledo, not to meet again on earth. Monday forenoon, Oct. 7, I received word from Dayton that Mr. Langstroth was no more, "for God took him." On the previous Sabbath he had gone to the church, to attend the communion service and to assist the pastor in its administration. All the members of Mrs. Cowan's family were at home and attended the service, but one. Among the number was her grandchild, the infant daughter of Lorraine Cowan, of Indianapolis. "Take her," said Mr. Langstroth, "and then, in after years, she can say that the first time she ever went to church she heard her great-grandfather preach."

At the church, the pulpit was put aside on the rostrum, and a chair placed for Mr. Langstroth, who said that he "did not feel as well as usual." He sat down and said, in substance, "I want to talk to you of the love of God, and how we ought—" then paused and wavered. The pastor, Rev. Raber, noticed the circumstance, and came to his assistance, and in a moment Aurelius Cowan was at his grandfather's side. Most of the audience remained in their seats, and no one cried out. There were two physicians present, but there was no opportunity for medical skill.

Thus amid silence and awe the spirit of our friend and brother went swiftly away "in the beauty of holiness." I have thought, again and again, how significant and beautiful was that death. For him was fulfilled the promise, "At evening time it shall be light." After a variety of experiences, and a full share of peculiar affliction, he was enabled to round up his career with satisfaction and triumph. A time of "clear shining after rain" was given him to journey to the beekeepers' convention of North America, and thus bear, at the very close of life, his well-earned honors, thick upon him. Deprived of the work of the pastorate through so many years, he was permitted to die in the very performance of the ministerial office, and in the administration of the Lord's supper.

## For Bee Stings

Miles E. Miller, of New York state, makes the following suggestion for relieving pain caused by a bee sting:

"After scraping off stinger, smear spot with liquid honey. Nothing can beat it to relieve pain and stop swelling."

## Will Wheat Germ Substitute for Pollen?

By L. F. Childers,  
Missouri.

I am more than interested in your editorial "Substitutes for Pollen" which appeared in the November issue. Drouth and foulbrood have devastated my apiary to the point where I shall cyanide all remaining colonies and start over again with package bees on new foundation. I plan to get these packages early and feed syrup. There will be mighty little pollen extant at this time so I had considered feeding wheat germ, placing it in convenient receptacles about the apiary.

Your discussion of rye flour calls to mind an experience I had some years ago with barley meal. Someone told me that bees needed pollen early in the spring and that barley flour would be a great help. I got some barley meal and put it out. The bees paid no attention to it. I poured on some extracted honey then they located it and when the honey was gone I put on more meal. On warm days it was a pleasing sight to see the bees take a nose dive into that meal coming out white all over. The bees did mighty well that year whether or not the meal helped I don't know. But this time I am up against a bigger problem. I am playing now for stakes and every lick must count.

I may be all "wet" about this wheat germ idea but I think there is ground for it. I have recently spent a term as state feed inspector and learned through milling literature and an occasional "Old Time Miller" that the germ of wheat which appears in the shorts is known as "Bee-Wing-Bran." That in many exposed mills bees will get into the shorts bin and carry away this flaky wheat germ hence its name. This part of the wheat kernel is not permitted to get into the flour because it is a yellow waxy substance that gets the flour off color. In the milling process it, along with other wheat offal, is thrown into the stream that makes up wheat shorts. However, some mills take it out pure—one sack to every twenty-one of shorts.

Wheat germ is a flaky substance looking like small pieces of beeswax. It has a sweetish taste, is quite laxative, contains about thirty per cent of protein and is very high in organic phosphorous. In this respect it compares very favorably with pollen. It contains the recently discovered **Harmon** that functions sexually. Early fox breeders had great difficulty getting the female fox to carry her young to maturity. A small quantity of wheat germ added to her diet has eliminated this difficulty. Poultrymen are now incorporating this ingredient

in their breeder mashes claiming better hatches and stronger chicks. It is known that young chicks grow faster and mature quicker when five or more per cent of wheat germ is added to the starting ration. There is no doubt that the more vital of the vitamins are present in it.

So if this is the material that bees carry away when visiting rye flour, barley meal or wheat shorts then why not feed it pure? Flour contains no mineral and but a small per cent of protein. I do not believe bees ever take that, but the life giving parts if the plant is always surcharged with the highest kind of proteins, organic minerals, vitamins and everything else to give the young a boost. So if my bees will condescend to eat wheat germ I'll be fixed; otherwise the "horse-laugh" will be on me. Has anyone had experience on this point?

## Meetings and Events

(Continued from page 341)

No. 1 consisting of Jo Daviess, Stephenson, Carroll and Whiteside Counties, which was held at Schudt Park, Waddams Grove, on May 26 was attended by a large gathering and proved one of the most delightful events sponsored by the organization in recent years. C. W. Duerrstein, president, acted as presiding officer. The program included a guitar and ukulele duet and songs by Carlene and Martha Duerrstein.

C. L. Duax, state inspector, gave a brief address reviewing inspection work in this district, while George Sauer, Polo, gave an interesting poem entitled "Good Work of the Honey-bee." Advertising and the use of surplus honey were discussed by Mrs. Irene Duax.

A smoking contest with a large number of entrants was won by Chester Keister, Orangeville, while the queen hunting contest was won by George Sauer, Polo. Winners in the string contest were Mrs. C. Handel, Savanna; Mrs. Chester Keister, Orangeville and Mrs. G. Graves, Jonesville.

Hostesses for the year were named as follows:

Mrs. William Brown, Waddams Grove; Mrs. C. W. Duerrstein, Galena, and Mrs. Charles Handel Savanna. John Faist of Freeport is secretary of the organization.

Following the program, refreshments were served.

Ruth Duerrstein.

### Summer Picnic

The Virginia State Beekeepers' Association will hold their summer picnic at the home of John H. Protheroe, Rustburg, Va., on July 17.

A. D. Hiatt,  
Lynchburg, Va.



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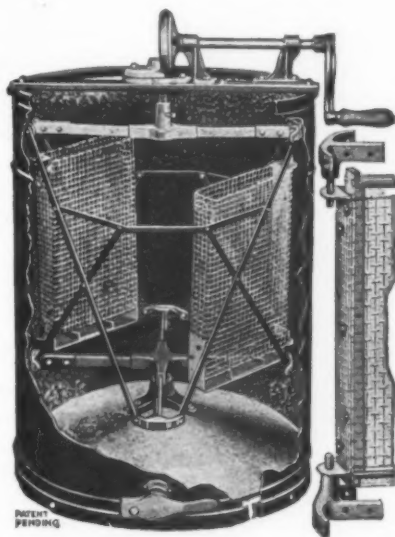
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# Crop and Market Report

Compiled by M. G. Dadant.

For our July issue, we asked reporters to answer the following questions:

1. Condition of honey plants?
2. How is the crop so far compared to 1934?
3. Condition of bees? Swarming?
4. If any buyers active, how are prices compared to 1934?

## Condition of Honey Plants

As stated in our previous issue, the dry weather of 1934 undoubtedly has hurt badly, in those sections which were affected since it has practically eliminated the white clover in many sections and damaged the sweet clover severely.

However, the copious rains which have fallen over almost all of the country, have put honey plants in the very finest condition possible. Even where clover is scarce, such as there is, is excellent.

The New England States report particularly fine conditions with New York only about 90 per cent of last year. However, the entire Southeast are reporting much better conditions than a year ago except Florida where the frost effect is still being felt.

The entire South reports honey plant conditions in at least normal.

In the North Central states, we find some effect of the drought particularly in Michigan and northern Indiana and in fact all over the section because of the fact that there will be practically no white clover. However, every now and then correspondents are writing in that white clover is beginning to bloom some and perhaps more sprouted last fall than it was at first anticipated.

The sweet clover conditions are far better in Minnesota and North Dakota and even though short in South Dakota, Nebraska and Kansas, the plants that are there give promise of so much better yields than last year, that conditions look very much better, even in Oklahoma.

In the Intermountain states, there has been sufficient irrigation water and irrigated sections look favorable. In unirrigated sections, however, in many instances, there has not been enough moisture.

Utah and Nevada are normal at least. On the Pacific slope, Washington and Oregon have normal honey plant conditions and this report is true into all parts of California.

The Canadian provinces have satisfactory moisture conditions and ample plants for a crop.

## Crop Compared to 1934

In northern sections, of course, the crop has not been harvested yet and all we can get is a comparison of prospects. The cold weather practically all over the country has done some damage because it has delayed the honey crop from one to three weeks.

However, in the southeastern states, we find the crop is very much better than a year ago, except in Florida as stated above. Kentucky and Tennessee, however, do not report as good conditions and Louisiana and Mississippi are far below normal not because of honey plants but because of unfavorable weather. Even Texas which had excellent prospects has suffered on account of bad weather conditions.

In the Central states, there have been in many cases good flows from dandelion honey but all in all the backward weather has meant some starvation, much feeding and a delay which makes one wonder whether the crop will be as good as last year even though the honey plant conditions are so much better.

In fact we might say this exists all over the country. What the beekeepers need now is some good hot corn weather that will let the clovers bloom, with just enough showers in between to keep them going along.

Anyone acquainted with the white clover regions would state that if 1935 honey plant conditions are a criteri-

on, there ought to be a bumper white clover crop next year. White clover is thick everywhere and growing luxuriantly.

## Condition of Bees

As a consequence of the cold and backward weather throughout practically all the sections, bees have been delayed. They were building up earlier in excellent shape and then the cold weather came on adding two factors. The one was to crowd all the bees into an already crowded hive and induce swarming and the other was to reduce the egg laying of the queen and gradually to a dwindling of the colony unless feeding were resorted to.

The spring has been an unusual one in this respect and our reports show more than the average amount of bees below normal condition. Even in spite of this fact, there has probably been at least equal the volume of swarming if not more than there was in 1934. California which had remarkable prospects two months ago, has not cashed in quite so well as anticipated on account of the very cold and backward weather. The orange bloom will probably not exceed a year ago and sage, although better, will not come up to fond expectations of earlier. This applies to practically all sections of California.

## Buyers?

Large buyers of honey have not as yet been active except perhaps in California where offers are being made at prices about 1 cent less than last year. At least this was so two or three weeks ago. However, recently foreign inquiries have come in which has tended somewhat to a stiffening of the market.

As a general rule, however, wherever carlot sales are desired, there is an effort being made on the part of the buyer to reduce the price over last year or bide his time until the new crop arrives if possible.

On the other hand in a retail sales way, a very large percentage of reports indicate that there has been a pick-up in demand and an advance in price during May and June.

This is particularly noticeable in the Southeast where honey prices are better and sales are quickening. There will be no doubt but that the southeastern beekeepers will be able to dispose of all their honey and readily at good prices.

Just what will happen to the large carlot market depends largely on the beekeepers themselves.

We can see no indication at present that there is going to be anything like a bumper crop and if the honey is fed gradually into the trade channels, price of 1935 should be maintained. In fact, if business revival continues, prices should perhaps stiffen somewhat. They no doubt will stiffen in a retail way where the beekeeper disposes of his own crop locally. Just what they will do in a carload way remains to be seen. However, carlot buyers are not speculating but waiting unless they can get an advantageous price.

We learn of considerable honey still held in Michigan, some few cars in Utah and, of course, the new crop coming on in California and Arizona.

## Conclusion

In conclusion, cold and backward conditions undoubtedly have held the bees back but it has as well held the blooming of honey plants back and apparently bees will be in proper shape for the harvest should the weather not prove inclement.

No doubt the wet weather has put honey plant conditions in the very finest shape for a future season and some beekeepers are already pointing for 1936.

On account of the drought last year and the reduced acreages of sweet clover and white clover, we do not see how there can be anything like a bumper crop. In fact, the weather might make all the difference in the world and reduce the crop below last year.

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**TUPELO HONEY**, new sixty pound cans, 8c per lb. W. H. Marks, Apalachicola, Fla.

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**HOWDY'S EXTRACTED HONEY**—Some 1934 crop still on hand. New crop will be ready August first. Special offer to New England for September delivery. Howard Potter, Ithaca, Michigan. Edward Batchelder, 238 Lincoln Avenue, Cliftondale, Massachusetts.

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**70 CASES** 60-LB. empty honey cans and cases, used once, clean-bright, two cans to case, 45c per case. J. K. Wolosevich, 3005 Archer Ave., Chicago, Ill.

**FOR SALE**—Root Simplicity extractor slightly used, 45 racks. Also 40 gal. tank. H. L. Case, 156 West Ave., Canadagua, N.Y.

**FOR SALE**—45 Frame Simplicity extractor. Good condition.

M. W. Pickering, Lewisville, Ind.

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## *The* POSTSCRIPT

GOSSIP ABOUT THE OFFICE IN THE MAKING OF THE MAGAZINE

Letters about buckwheat continue to come. One of special interest is from New York and from a beekeeper who reports that only once in thirty-eight years has he failed to get a crop of buckwheat honey on clay loam and gravel soils. The one failure, last year, was because of dry weather.

One of the new vines planted at this farm is evergreen bittersweet. Wilhelm Miller wrote several years ago that, if he had a million dollars to spare, he would plant evergreen bittersweet against every wall in America. While I can hardly imagine myself so enthusiastic as to propose to spend a million dollars to plant it everywhere, I am very much interested in this vine and hope to find it a real acquisition.

Mrs. Helen M. Fox, author of "Gardening With Herbs" and a book on lilies, has given up her bees in favor of her garden. She writes that lifting the heavy supers became too difficult for her and that she gave up her bees with real regret. Too often women find the heavy lifting a bar to enjoyment of bee culture. It is unfortunate; for women of this type can make a very definite contribution to the industry.

R. G. Richmond, of Colorado, recently called attention to the fact that the future of beekeeping rests in the class of amateurs who are now its enthusiastic supporters. It is from this group that future commercial honey producers will very largely be recruited, and it is they who arouse the interest of the public in our product and keep alive an active market demand. More encouragement should be given to those people who wish to take up beekeeping for recreation.

An Illinois reader asks for information concerning the seeds of the different kinds of locust trees. There is a great deal of confusion regarding the black locust and the honey locust although they little resemble each other. Both trees belong to the very large family of legumes which gather their supply of nitrogen from the air and are thus useful as soil builders.

The seed pods of the honey locust are about an inch in width and from six inches to a foot in length, much like the pods of a large lima bean. The seeds are nearly round and as large as bullets. The seed pod of the black locust is much smaller. The seeds are kidney shaped and not more than one-fourth the size of the honey locust seed.

There is another related tree—the Kentucky coffee tree which is also sometimes confused with the locust. It also has large pods, and the seeds are much larger than either of the others. The black locust is the tree of most value to the bees as a source of honey.

H. B. Honeywell, of Englewood, Colorado, writes that he formerly kept pure Italian bees but now has Caucasians. He states that disease is less serious with the Caucasians and does not make the progress it formerly did with the Italians.

There is an increasing amount of evidence that Caucasian and Carniolan bees are less likely to succumb to foulbrood than the Italians. Simmins, author of a well known English book, wrote more than thirty years ago that he was able to clear his bees of foulbrood without destroying the combs by the use of Carniolan stock. Probably there is a difference in different strains of these bees. It is important to find the most resistant strains.

J. M. Mace, of Terre Haute, Indiana, writes that he knows of an apiary which has shown no disease, although American foulbrood has been within two miles of it for fifteen years. In this case it would be interesting to know whether the bees are resistant or whether they have been so fortunate as to avoid exposure.

We are anxious to find stock of every kind which is apparently disease resistant in order to put it to the actual test and to determine how much difference there really is.

H. W. Palmer, of West Salem, Ohio, tells an interesting story of finding worker bees in queen cells and wonders how the bees could make such a mistake. I agree with his explanation that the bees had only partly mature larvae from which to select at the time the cells were built. This happened several days after a swarm issued and it is probable that the virgin on which they had depended was lost or injured.

When Dr. Park and Professor Paddock, of Iowa State College, and M. G. Dadant visited me at my Iowa farm at the end of May, the bees were working heavily on Virginia waterleaf, a native woodland plant which is extremely valuable for honey but which is now becoming rare. There are several acres of this plant in my wild flower preserve and the bees were getting a nice flow from it, along with dandelion. Many of the sources of honey on which the pioneers of the Middle West depended have been replaced by cultivated crops. Wild onion is a familiar example.

The abundant rain which came to this section in late spring has certainly changed the appearance of things. Everything is green and flourishing instead of withered and dry as it was last year. The bees built up rapidly in spite of being frequently confined to their hives by the inclement weather.

One correspondent comments on the large number of persons who are leaving northern cities to go south to engage in some rural pursuit. One government project provides funds to move the jobless to cheap land in the South.

While there are many attractions in the South, it is important that one who is unacquainted with the region be very careful before he invests in land. Much of it is poorly suited to cultivation. The beekeeper who does not buy real estate can move readily if he finds himself in a poor location but the land owner is likely to find it difficult to realize on his investment.

The way the bees have roared over the raspberry fields between showers in early June has been a joy both to the fruit grower and the beekeeper in this locality.

A quiet June Sunday on the farm front porch offers a very satisfactory diversion for me. I can watch squirrels eating elm seeds in the top of one tree, blue jays building their nest in another and bees getting pollen from walnut catkins in a third. Dozens of birds of more than a dozen kinds flitting about, singing from the treetops and busy about their family affairs attract one's attention first in one direction and then in another. All the time the air is vibrant with the homing call of the bees coming in heavily loaded with nectar gathered from raspberry.

There is much of interest in the many reminders sent to me of friendly readers of this page—a bird house made from a cocoanut made by an Iowa friend; trees from one state; vines from another, and plants and shrubs from still others. I am more of a naturalist than a gardener and some things do not get their merited attention, but all are appreciated and some do surprisingly well.

FRANK C. PELLETT, Atlantic, Iowa.